Service Manual

Model : GD350

Internal Use Only

Service Manual

GD350

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1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it.

The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated 

by the sign. Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

1.3 Abbreviations

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current – Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milli watt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIB	General Purpose Interface Bus
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode
OPLL	Offset Phase Locked Loop

PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
PSRAM	Pseudo SRAM
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol

2. PERFORMANCE

2.1 H/W Features

Item	Feature	Comment
Standard Battery	Lithium-Polymer, 3.7V 800mAh	
Stand by TIME	Up to 350 hrs : Paging Period 5, RSSI 85dBm	
Talk time	Up to 200min : GSM Tx Level 7	
Stand by time	Up to 350 hours (Paging Period: 5, RSSI: -85 dBm)	
Charging time	Approx. 2.5 hours	
RX Sensitivity	GSM, EGSM: -109dBm, DCS: -109dBm	
TX output power	GSM, EGSM: 32.3dBm(Level 5), DCS , PCS: 29.5dBm(Level 0)	
GPRS compatibility	Class 10	
SIM card type	3V / 1.8V	
Display	MAIN : 2.0" TFT 176 × 220 pixel 262K Color SUB : 23x5 Red LEDs Module	
Status Indicator	Hard icons. Key Pad 0 ~ 9, #, *, Up/Down Left/Right OK Key Send Key, PWR Key ,Soft Key(Left/Right), Camera, Music Key	
ANT	Internal	
EAR Phone Jack	Yes	
PC Synchronization	Yes	
Speech coding	EFR/FR/HR	
Data and Fax	Yes	
Vibrator	Yes	
Loud Speaker	Yes	
Voice Recoding	Yes	
Microphone	Yes	

2. PERFORMANCE

Item	Feature	Comment
Speaker/Receiver	18x12Φ Speaker/ Receiver	
Travel Adapter	Yes	
MIDI	SW MIDI (Mono SPK)	
Camera	2.0M FF	
Bluetooth / FM Radio	Bluetooth version 2.1 / 76~108MHz supported	

2.2 Technical Specification

<table>
<tr><th>Item</th><th>Description</th><th>Specification</th></tr>
<tr><td>1</td><td>Frequency Band</td><td>GSM850
TX: 824 ~ 849 MHz
RX: 869 ~ 894 MHz
EGSM
TX: 880 ~ 915MHz
RX: 925 ~ 960 MHz
DCS
TX: 1710 ~ 1785 MHz
RX: 1805 ~ 1880 MHz
PCS
TX: 1850 ~ 1910 MHz
RX: 1930 ~ 1990 MHz</td></tr>
<tr><td>2</td><td>Phase Error</td><td>RMS < 5 degrees
Peak < 20 degrees</td></tr>
<tr><td>3</td><td>Frequency Error</td><td>< 0.1 ppm</td></tr>
<tr><td>4</td><td>Power Level</td><td>
GSM850/EGSM
<table>
<tr><th>Level</th><th>Power</th><th>Toler.</th><th>Level</th><th>Power</th><th>Toler.</th></tr>
<tr><td>5</td><td>33dBm</td><td>±2dB</td><td>13</td><td>17dBm</td><td>± 3dB</td></tr>
<tr><td>6</td><td>31dBm</td><td>±3dB</td><td>14</td><td>15dBm</td><td>± 3dB</td></tr>
<tr><td>7</td><td>29dBm</td><td>±3dB</td><td>15</td><td>13dBm</td><td>± 3dB</td></tr>
<tr><td>8</td><td>27dBm</td><td>±3dB</td><td>16</td><td>11dBm</td><td>± 5dB</td></tr>
<tr><td>9</td><td>25dBm</td><td>±3dB</td><td>17</td><td>9dBm</td><td>± 5dB</td></tr>
<tr><td>10</td><td>23dBm</td><td>±3dB</td><td>18</td><td>7dBm</td><td>± 5dB</td></tr>
<tr><td>11</td><td>21dBm</td><td>±3dB</td><td>19</td><td>5dBm</td><td>± 5dB</td></tr>
<tr><td>12</td><td>19dBm</td><td>±3dB</td><td></td><td></td><td></td></tr>
</table>
DCS/PCS
<table>
<tr><th>Level</th><th>Power</th><th>Toler.</th><th>Level</th><th>Power</th><th>Toler.</th></tr>
<tr><td>0</td><td>30dBm</td><td>±2dB</td><td>8</td><td>14dBm</td><td>± 3dB</td></tr>
<tr><td>1</td><td>28dBm</td><td>±3dB</td><td>9</td><td>12dBm</td><td>± 4dB</td></tr>
<tr><td>2</td><td>26dBm</td><td>±3dB</td><td>10</td><td>10dBm</td><td>± 4dB</td></tr>
<tr><td>3</td><td>24dBm</td><td>±3dB</td><td>11</td><td>8dBm</td><td>± 4dB</td></tr>
<tr><td>4</td><td>22dBm</td><td>±3dB</td><td>12</td><td>6dBm</td><td>± 4dB</td></tr>
<tr><td>5</td><td>20dBm</td><td>±3dB</td><td>13</td><td>4dBm</td><td>± 4dB</td></tr>
<tr><td>6</td><td>18dBm</td><td>±3dB</td><td>14</td><td>2dBm</td><td>± 5dB</td></tr>
<tr><td>7</td><td>16dBm</td><td>±3dB</td><td>15</td><td>0dBm</td><td>± 5dB</td></tr>
</table>
</td></tr>
</table>

2. PERFORMANCE

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	**GSM850/ EGSM**	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-63
		3,000~ <6,000	-65
		6,000	-71
		DCS/PCS	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-65
		3,000~ <6,000	-65
		6,000	-73
6	Output RF Spectrum (due to switching transient)	**GSM850/ EGSM**	
		Offset from Carrier (kHz).	Max. dBm
		400	-19
		600	-21
		1,200	-21
		1,800	-24

<table>
<tr><th>Item</th><th>Description</th><th colspan="3">Specification</th></tr>
<tr><td rowspan="6">6</td><td rowspan="6">Output RF Spectrum
(due to switching
transient)</td><td colspan="3">DCS/PCS</td></tr>
<tr><td colspan="2">Offset from Carrier (kHz).</td><td>Max. dBm</td></tr>
<tr><td colspan="2">400</td><td>-22</td></tr>
<tr><td colspan="2">600</td><td>-24</td></tr>
<tr><td colspan="2">1,200</td><td>-24</td></tr>
<tr><td colspan="2">1,800</td><td>-27</td></tr>
<tr><td>7</td><td>Spurious Emissions</td><td colspan="3">Conduction, Emission Status</td></tr>
<tr><td>8</td><td>Bit Error Ratio</td><td colspan="3">GSM850, EGSM
BER (Class II) < 2.439% @-102 dBm
DCS,PCS
BER (Class II) < 2.439% @-100 dBm</td></tr>
<tr><td>9</td><td>RX Level Report Accuracy</td><td colspan="3">±3 dB</td></tr>
<tr><td>10</td><td>SLR</td><td colspan="3">11±3 dB</td></tr>
<tr><td rowspan="10">11</td><td rowspan="10">Sending Response</td><td>Frequency (Hz)</td><td>Max.(dB)</td><td>Min.(dB)</td></tr>
<tr><td>100</td><td>-12</td><td>-</td></tr>
<tr><td>200</td><td>0</td><td>-</td></tr>
<tr><td>300</td><td>0</td><td>-12</td></tr>
<tr><td>1,000</td><td>0</td><td>-6</td></tr>
<tr><td>2,000</td><td>4</td><td>-6</td></tr>
<tr><td>3,000</td><td>4</td><td>-6</td></tr>
<tr><td>3,400</td><td>4</td><td>-9</td></tr>
<tr><td>4,000</td><td>0</td><td>-</td></tr>
<tr><td>12</td><td>RLR</td><td colspan="3">4±3 dB (middle volume)</td></tr>
</table>

2. PERFORMANCE

<table>
<tr><th>Item</th><th>Description</th><th colspan="3">Specification</th></tr>
<tr><td rowspan="11">13</td><td rowspan="11">Receiving Response</td><td>Frequency (Hz)</td><td>Max.(dB)</td><td>Min.(dB)</td></tr>
<tr><td>100</td><td>-12</td><td>-</td></tr>
<tr><td>200</td><td>0</td><td>-</td></tr>
<tr><td>300</td><td>2</td><td>-7</td></tr>
<tr><td>500</td><td>*</td><td>-5</td></tr>
<tr><td>1,000</td><td>0</td><td>-5</td></tr>
<tr><td>3,000</td><td>2</td><td>-5</td></tr>
<tr><td>3,400</td><td>2</td><td>-10</td></tr>
<tr><td>4,000</td><td>2</td><td></td></tr>
<tr><td colspan="3">* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.</td></tr>
<tr><td>14</td><td>STMR</td><td colspan="3">> 17 dB</td></tr>
<tr><td>15</td><td>Stability Margin</td><td colspan="3">> 6 dB</td></tr>
<tr><td rowspan="9">16</td><td rowspan="9">Distortion</td><td colspan="2">dB to ARL (dB)</td><td>Level Ratio (dB)</td></tr>
<tr><td colspan="2">-35</td><td>17.5</td></tr>
<tr><td colspan="2">-30</td><td>22.5</td></tr>
<tr><td colspan="2">-20</td><td>30.7</td></tr>
<tr><td colspan="2">-10</td><td>33.3</td></tr>
<tr><td colspan="2">0</td><td>33.7</td></tr>
<tr><td colspan="2">7</td><td>31.7</td></tr>
<tr><td colspan="2">10</td><td>25.5</td></tr>
<tr><td>17</td><td>Side Tone Distortion</td><td colspan="3">Three stage distortion < 10%</td></tr>
<tr><td>18</td><td>System frequency (13 MHz) tolerance</td><td colspan="3">≤ 2.5 ppm</td></tr>
<tr><td>19</td><td>32.768KHz tolerance</td><td colspan="3">≤ 30 ppm</td></tr>
<tr><td>20</td><td>Ringer Volume</td><td colspan="3">At least 55 dBspl under below conditions:
1. Ringer set as ringer.
2. Test distance set as 1 m</td></tr>
</table>

<table>
<tr><th>Item</th><th>Description</th><th colspan="2">Specification</th></tr>
<tr><td>21</td><td>Charge Current</td><td colspan="2">Fast Charge : Typ. 430 mA
Slow Charge : Typ. 80mA
Total Charging Time : < 3 hours</td></tr>
<tr><td rowspan="8">22</td><td rowspan="8">Antenna Display</td><td>Bar Number</td><td>Power</td></tr>
<tr><td>7</td><td>-93 ≤</td></tr>
<tr><td>7 -> 5</td><td>-93 ± 2</td></tr>
<tr><td>5 -> 4</td><td>-98 ± 2</td></tr>
<tr><td>4 -> 2</td><td>-101 ± 2</td></tr>
<tr><td>2 -> 1</td><td>-104 ± 2</td></tr>
<tr><td>1 -> 0</td><td>-106 ± 2</td></tr>
<tr><td>0 -> OFF</td><td>-106 ≥</td></tr>
<tr><td rowspan="5">23</td><td rowspan="5">Battery Indicator</td><td>Battery Bar Number</td><td>Voltage</td></tr>
<tr><td>3</td><td>≥ 3.75± 0.05 V</td></tr>
<tr><td>3 -> 2</td><td>3.75 ± 0.05 V</td></tr>
<tr><td>2 -> 1</td><td>3.68 ± 0.05 V</td></tr>
<tr><td>1 -> 0</td><td>3.61 ± 0.05 V</td></tr>
<tr><td rowspan="2">24</td><td rowspan="2">Low Voltage Warning
(Blinking Bar)</td><td colspan="2">≤ 3.61 ± 0.05V (Call), 1 time per 1 minute (Receiver)</td></tr>
<tr><td colspan="2">≤ 3.61 ± 0.05V (Standby), 1 time per 3 minutes(Speaker)</td></tr>
<tr><td>25</td><td>Forced shut down
Voltage</td><td colspan="2">3.35 ± 0.05V</td></tr>
<tr><td>26</td><td>Sustain RTC
without battery</td><td colspan="2">Over 50 hours</td></tr>
<tr><td>27</td><td>Battery Type</td><td colspan="2">Lithium-Polymer Battery
Standard Voltage = 3.7 V
Battery full charge voltage = 4.2 V
Capacity: 800mAh</td></tr>
<tr><td>28</td><td>Travel Charger</td><td colspan="2">Switching-mode charger
Input: 100 ~ 240V, 50/60 Hz
Output: 5.1V, 700mA</td></tr>
</table>

3. TECHNICAL BRIEF

3.1 Baseband Processor Introduction

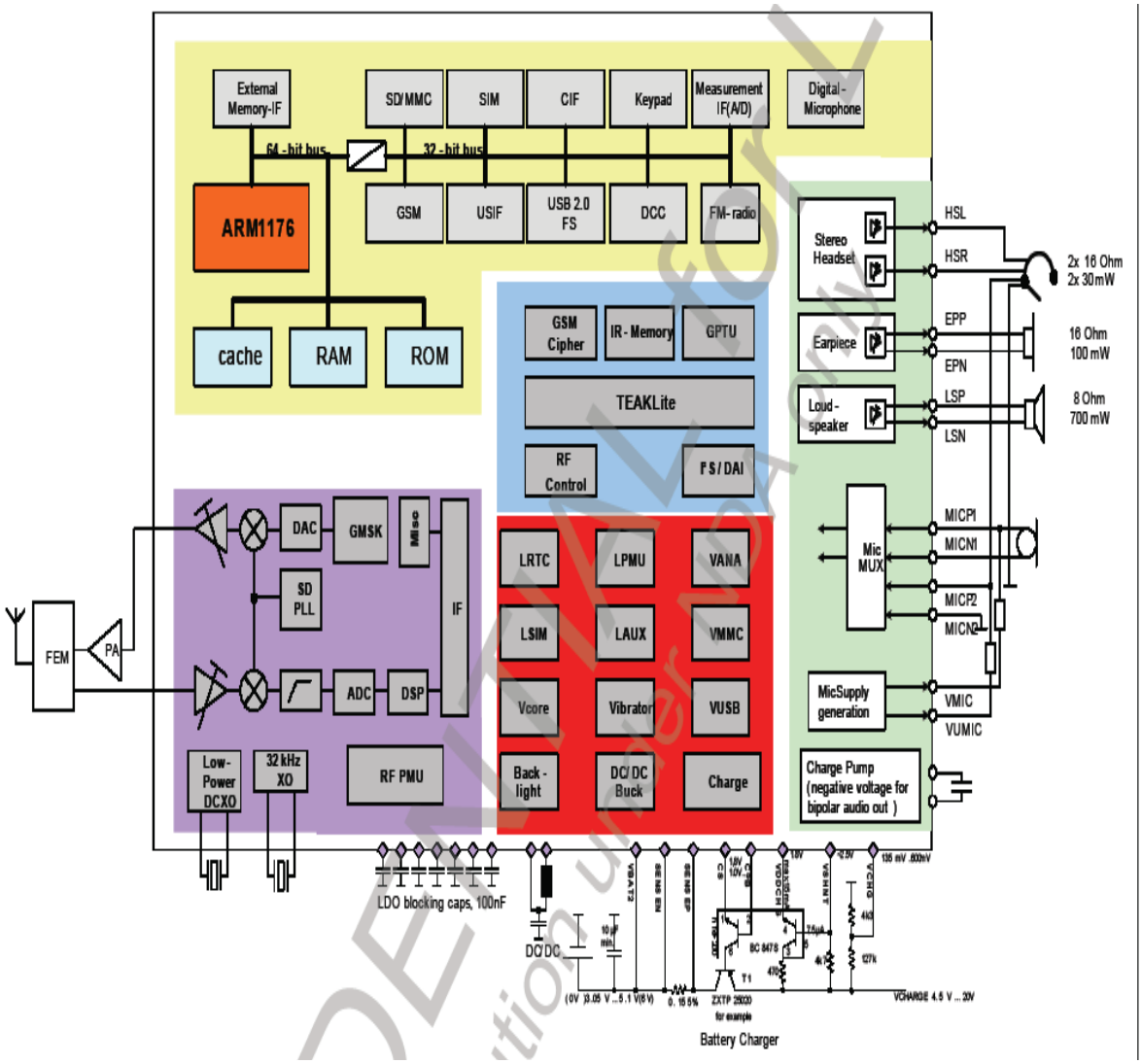


Figure. 3.1.1 X-Gold tm 213 Hardware Block Diagram

3.1.1 General

• Technology:
– SoC, Monolithic, 65 nm CMOS
• Package:
– eWLB, 8x8x0.8 mm
– 0.5 mm pitch
– 217 balls / 8-layer PCB

3.1.2 RF Transceiver

• Dual-band direct conversion receiver
• Tri/Quad-band possible with external circuitry
• Fully integrated digital controlled X0
• Additional buffer for 2 external system clocks
• Fully digital RF-Synthesizer incl. ΣΔ-Transmitter

3.1.3 Baseband

• DSP:
– 156 MHz TeakLite™
• MCU:
– ARM1176® @ 208 MHz
• MCU RAM:
– 3.00Mbit
• Memory I/F:
– 512 Mbit
• Modem:
– GPRS class 12, (RX/TX CS1-CS4)
– EGPRS class 12, (RX MCS1-MCS9, TX MCS1-MCS4)
• Cipher Units:
– A51/2/3
– GEA-1/2/3
• Security:
– OMTP TR0
– Secure Boot
– RSA(ROM)/SHA-1(HW accel.)
– OCDS disabling
– Certificate Management

• Speech Codec:
– FR / HR / EFR / NB-AMR
• Audio Codec (running on ARM1176):
– SP-MIDI
– SB-ADPCM
– MP3
– WB-AMR
– AAC/AAC+/eAAC+
• Others:
– DARP (SAIC)
– TTY
• Customization:
– E-Fuses

3.1.4 External Memory

• External Bus Unit
– 25-bit address bus (512 Mbit)
– 16-bit data bus
– 1.8V & 2.8V support
• Flash / RAM
– NOR Type
– Serial Flash SPI and SPI-4
– Parallel Flash (Page & Burst Mode)
- 16-bit Demultiplexed
- 16-bit AD-multiplexed
- 16-bit AAD-multiplexed
– iNAND Type e.g. oneNAND
• Memory card
– SD/MMC card interface with 1 or 4 data lines

3.1.5 Connectivity

• 3xUSIF (configurable either as SPI or UART), I2C, I2S; Interfaces @ 1.8V
• Direct (U)SIM 1.8/3V
• USB2.0 up to 480 Mbit/s (High Speed) w/ external USB Phy over ULPI interface
• Stereo Headset (Amplifier integrated)
• 3 external analog measurement PIN's
• Bluetooth

3.1.6 Mixed Signal

• Improved audio performance
• Loudspeaker Audio Class D Amplifier, 700 mW@8 Ω mono for hands-free and ringing
• Stereo Headset 2x30 mW@16 Ω w/o coupling C
• Mono Earpiece 100 mW@16 Ω
• Digital microphone supported
• Differential microphone inputs

3.1.7 FM Radio

• Integrated FM radio
– FM Stereo RDS Receiver
– Sensitivity 2 µV EMF
– Support for US & EU bands
– Stereo recording

3.1.8 Power Management

• Direct-to-Battery Connection
– LDOs (incl. capless)
– DC/DC step-down converter
– DC/DC step-up for white LED supply
• Battery Type
– Li-Polymer
• Charging control
– Battery temperature
– Watchdog protection
– Start-up on flat battery
• External Charger
– Switch mode
• USB battery charging
– USB charging spec 1.0 compliant
• Backlight
– Up to 4 serial white LEDs (integrated LDO)

3.1.9 Sub Display

• LED Module Display
– 115 LEDs (5x23 LEDs)
– RED Color
– Display Surface : 7.5 mm x 27.9 mm

3.1.10 Main LCD Display

• Type
– 176*220, QCIF, 262k color (parallel)
• Interface
– Parallel 8bit MIPI-DBI Type B
– Serial MIPI-DBI Type C
– Interf. voltage at 1.8V or 2.8V
• gRacr - Display Controller (Hardware)
– 30 fps Display update without DMA (up to 60 fps) (full or partial)
– Video post processing Scaling, Rotation (90° steps), Mirroring
– Overlay with alpha blending
– Color conversion YUV -> RGB
– 2D vector graphics (Lines, filled rectangles, Bit block transfer (e.g. sprites, scrolling, antialiased bitmap fonts)

3.1.11 Camera

• 2.0 Mpxls, FF
• Frame Rate : 15@UXGA, 30@SVGA
• 39 MHz Pixel Rate
• 15 fps@2.0 Mpx full resolution

3.1.12 Video Capabilities

• Video Decoding MPEG-4/H.263
– QCIF@30 fps
– QVGA@15fps
• Video Encoding MPEG-4/H.263
– QCIF@15 fps

3.1.13 Audio Capabilities

• Polyphonic ring tones
– 64 voices MIDI, SP-MIDI
– FM synthesizer
• AMR-WB
• True ring tones (MP3)
• MP3, eAAC+
• G.722 SB-ADPCM encoding/decoding

3.2 Power Management

A mobile platform requires power supplies for different functions. These power supplies are generated in the integrated power management Unit (PMU). The PMU is designed to deliver the power for a typical standard phone.

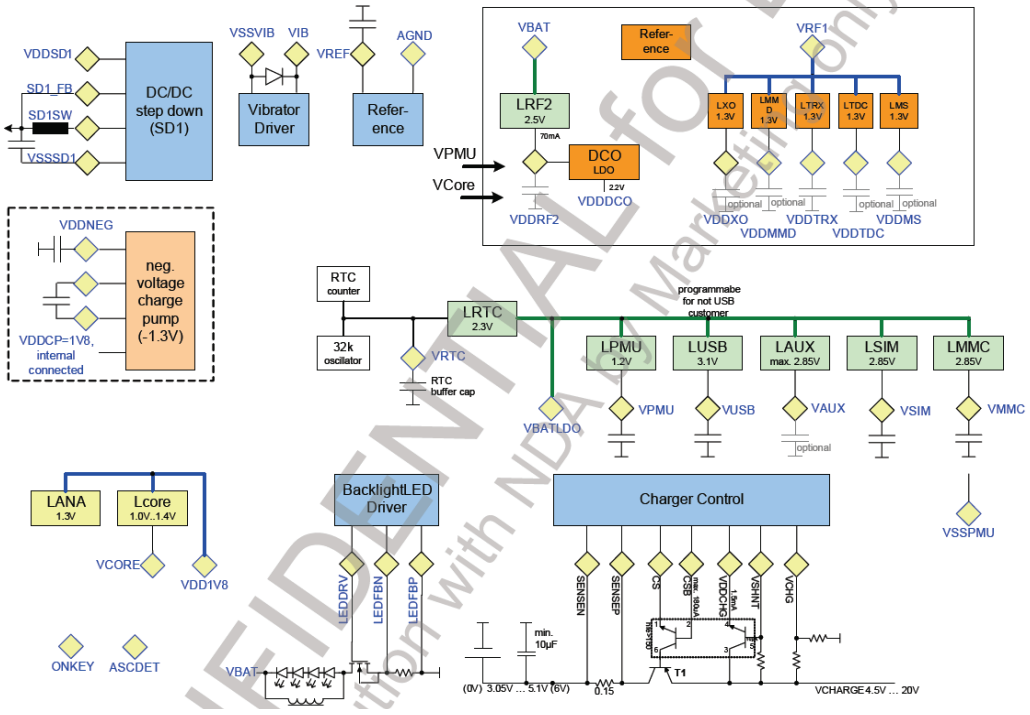


Figure. 3-2-1 Block Figure of the PMU Modules X-Gold tm 213

▪ DC/DC Step Down Converter for 1.8V (SD1)

The DC/DC converter generates a 1.8V supply rail. This voltage rail is used to supply main parts of the system, like the digital core of the chip (via LDO LCORE), some parts of the mixed signal macro, parts of the RF macro and the external memory if a 1.8V memory is used. The efficiency of the DC/DC converter is optimized for an average load current of 100mA. That is the load current estimated for the GSM talk mode.

▪ Linear voltage Regulators (low dropout) LDOs

The LDOs are used to generate the supply for the different supply domains not directly supplied out of the DC/DC converter.
The VSIM output current is high enough to drive USB SIM cards.

▪ LCORE

The LCORE LDO provides the VCORE supply used for most of the digital parts of the chip

▪ LPMU

The LPMU provides VPMU sued for the PMU supply, e.g. for the startup state machine and analog parts like ADC, sense amplifier etc.

▪ LUSB

The LUSB LDO generates the supply for the USB transceiver (output driver and input). If no USB interface is required, LUSB can be used as general purpose LDO.

▪ LAUX

The LAUX generates VAUX. It is a general purpose LDO and can be used for different functions depending on the phone application, e.g. for the display or Camera.

▪ LMMC

The LMMC generates VMMC. It is a general purpose LDO and can be used e,g. for memory cards

▪ LSIM

The LSIM LDO generates the VSIM supply for the SIM card and interface. It is designed to supply Standard SIM cards.

▪ Other LDOs

The RF module has implemented several LDO's for different RF Power domain.
The mixed signal module has some LDO's for the audio driver and microphone supply.

Supply Domain LDO Name	Voltage	Max. Current	Output Cap	Input Domain	Comment
VBAT	0 ... 6.0 V				Operating range is 3.05 V ... 5.5 V, system emergency switch off voltage is about 2.8 V
VDD1V8	1.8 V	450 mA	22 µF	VBAT	This voltage is generated by the DC/DC converter with 3.3 µH inductor, The voltage is used for: Memory supply, and via LDO's for digital core supply, mixed signal supply and RF supply.
LCORE	1.2 V	300 mA	2x100 nF	VDD1V8	
LANA	1.3 V	10 mA	No	VDD1V8	No ball
LRTC	2.3 V	2 mA	>=100 nF	VBAT	This supply is only used for the HPBG, the 32.768 kHz oscillator and the real-time clock counter required during the sleep- and low-power mode.
LPMU	1.2 V	15 mA	100 nF	VBAT	Supply for the digital part of the PMU including digital control of DC/DC converter. This voltage is also used for the N-DEMOS driver of DC/DC converter and the class-D amplifier and the core PLL.
LUSB	3.1 V	40 mA	100 nF	VBAT	Used for the USB driver supply or as general purpose LDO with programmable output voltages (2.5 V, 2.85 V, 3.1 V)
LAUX	1.5 V ... 2.85 V	150 mA	470 nF	VBAT	General purpose LDO for e.g. Display, Bluetooth, Camera etc. Programmable output voltages are (1.5 V, 1.8 V, 2.5 V, 2.85 V)
LSIM	1.8 V / 2.85 V	30 mA	>=100 nF	VBAT	LDO dedicated to the SIM-Card supply. It is chip internal connected to the SIM interface driver.
LMMC	1.5 V ... 2.85 V	150 mA	>=470 nF	VBAT	General purpose LDO, targeted for MMC/SD card supply.
VDDNEG	-1.3 V	100 mA	100 nF	VDD1V8	Negative voltage for the bipolar headset audio driver. Generated by a charge pump.

Table. 3-2-1 Power supply Domains (without RF)

3.2.1 Power on and startup

▪ Analog startup Circuit

Because the POR circuit and the LPBG are directly connected to the battery, it is not possible to switch them off. If the battery voltage exceethe LPMU regulator and d the power on reset threshold (2.5V), the power on reset is released, the LRTC voltage regulator are switched on. The LPMU regulator starts in its ultra-low power mode

The LPMU regulator generates a control signal (lpmu_OK) that enables the 50KHZ PMU oscillator. The output clock of the oscillator is checked with a fully coded counter. A counter overflow releases the reset (vpmu_rst_n) signal for the small PMU state-machine.

▪ Small first digital State-Machine

The small PMU state-machine is always connected to VPMU After starting from reset the small startup state machine enters the SYSTEM OFF state and only continuous the startup procedure if a switch on event like first connect, on-key, wake up or charge detect occurs.

▪ PMU-main State-Machine

The main PMU state-machine is always connected to VPMU also. The power up sequence driven by the PMU state-machine can be seen in Figure18. After enabling the reference (HPGB) and waiting for the settling time, the battery voltage is measured and compared with the power on threshold. If the battery voltage is high enough, the SD1 DC/DC converter and the LCORE LDO are started. A timer ensures that the supply voltage will be stable before the DCXO is enabled. The DCXO settling time is ensured using a fixed timer. After an overflow of this timer, the reset is released for the rest of the system. The PMU state machine remains in this System-ON state until the system is switched into the OFF state. For example the system sleep mode is completely configured by software(for example switching off the LDO's, switching of the DCXO etc.) and controlled by the VCXO_enable signal. The reason for the startup is stored in the ResetSourceRead register.

▪ Battery Measurement

The ADC and the oscillator for the ADC needs the VDD_ADC supply voltage from the LADC LDO. LADC uses either the charger voltage VDD_CHARGE or VDDRTC as input voltage. The input voltage is selected automatically by a bulk switch circuit. LADC, the ADC and the oscillator are enabled on request for every battery measurement if the charger unit is not running. This is handled by an ADC control block in one of the state-machines. If the charger unit is running the ADC is controlled by the charger state-machine

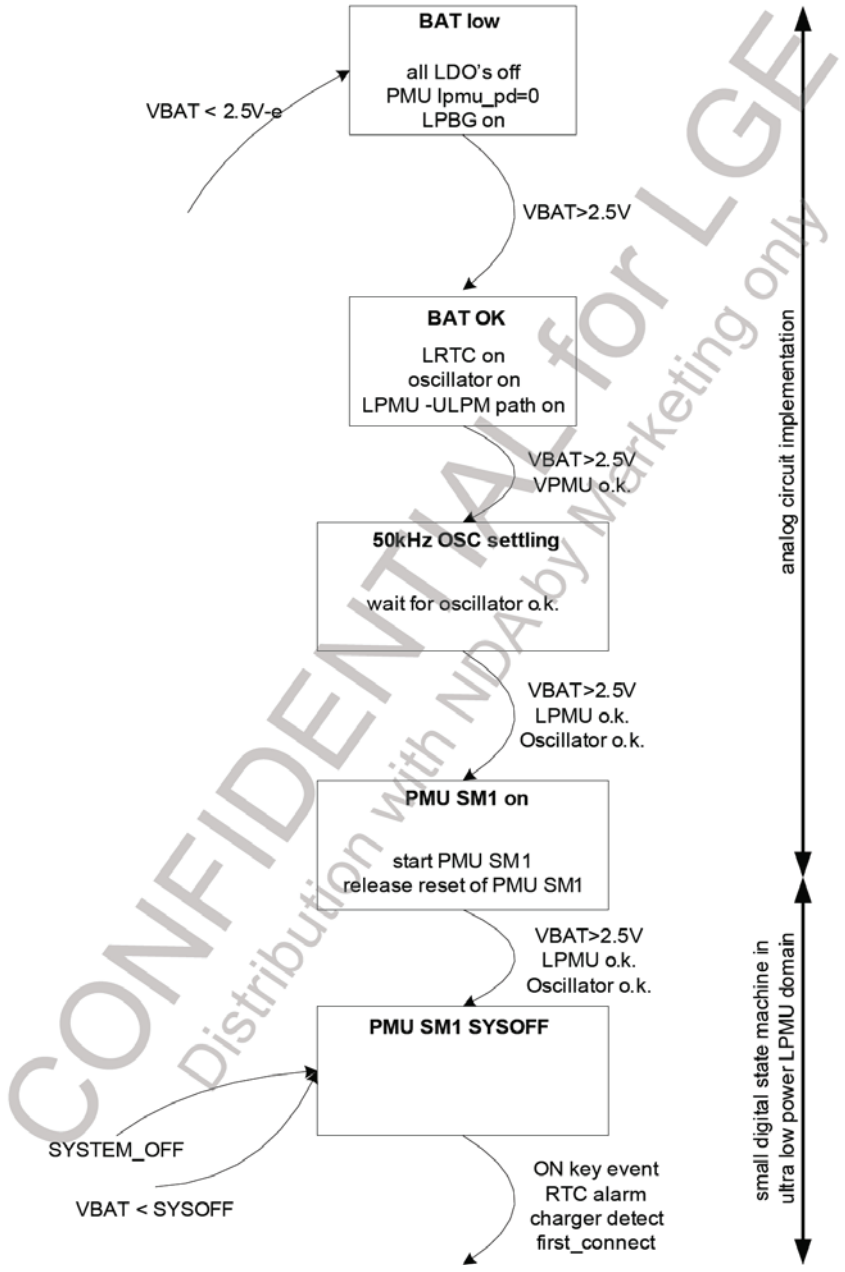


Figure.3.2.1 First Part of the State Machine, Running in Different Power Domains than the Second Part

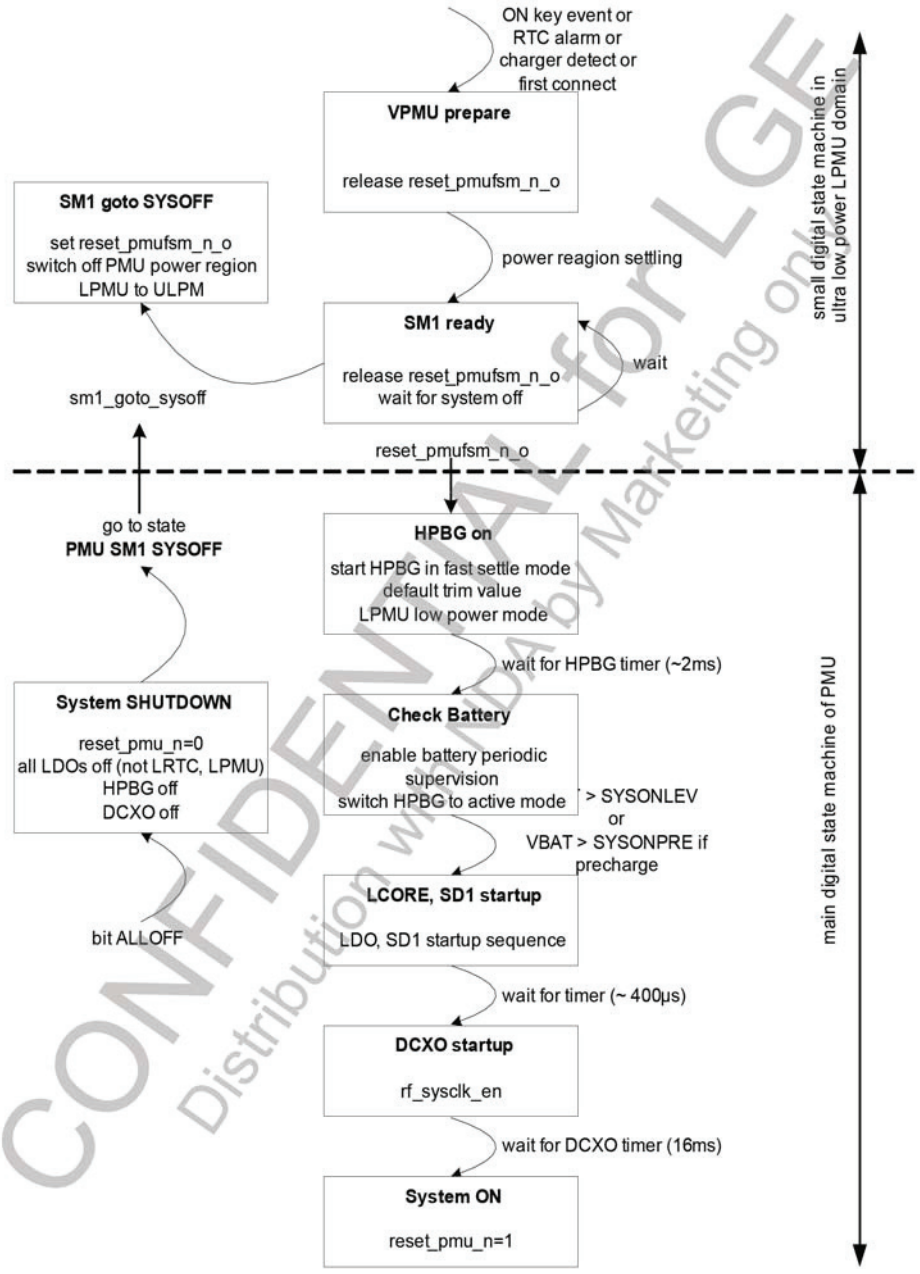


Figure 3.2.2 Second (Main) Part of the Startup State Machine in the VPMU Domain

3.2.2 Switching on due to first connect

If the battery voltage is connected the first time, that means the system enters the first time the SYSOFF state, this is stored in a first connect flag. If the first connect flag is set, the system will start immediately and not wait for any other system on event in the SYSOFF state.

3.2.3 Switching on due to on-Key event

The on key is connected to the ONKEY pad. The ESD protection and the input structure of this pad are connected to VRTC. If the ONKEY pad is forced to VRTC by an external key or similar circuit, the system starts. The ONKEY is sampled with the PMU clock. It has to be sampled four times high before a valid on event is generated. The status of the ON key can be read in the PMU registers, so it can be used as a functional key during phone operation also

3.2.4 Switching on due to RTC alarm

The real time clock can generate a wakeup signal called RTC alarm. This signal is sampled from the state-machine and after successfully detecting a high, the system is switched on.

3.2.5 Switching on due to charging

When a battery with a voltage below the SSONLEV level is inserted, the state machine will not start the system. As long as the battery voltage stays lover than SYSONLEV the system will stay off. The only possibility to start up the system is due to an external charger.

If an external charger is connected and detected and the battery is charged above the SYSONPRE voltage level the system will start up.

The PMU main state machine waits in the Check battery state until the battery voltage condition is fulfilled. The charger state machine provides the necessary pre-charge indication signal. This pre-charge signal is denounced in a small counter to have a stable signal. This is important, especially in half/full-wave charging where the charger detection is switching between charger detected/not detected according the AC supply frequency. reasons

For details on pre-charging see the charger chapter. The charger is controlled by an independent state machine. The pre-charge signal is used to trigger the pre-charge signal is used to trigger the pre-charge functionality. The charger state machine fully control the pre-charge, the PMU-state machine now changes to state HPBG on state and the system starts. This state change is indicated to the charger state-machine to
enable the charger watchdog for safety

3.2.6 Power Supply Start-up sequence

In order to avoid an excessive drop on the battery voltage caused by in-rush current during system power-on, possibly leading to system instability and “hick-ups” a staggered turn-on approach for the regulators is implemented. The regulators are turned on in a well defined sequence, thus spreading the in-rush current transients over time.

The IO’s of X-GOLD TM 213 are isolated in OFF mode (core supply is off). The isolation signal is controlled by the PMU state machine. This ensures that the PADs are in a well defined state during core supply settling. This allows to power up the LCORE core regulator and wait for the core to reach reset state before powering up the I/O supply regulators.

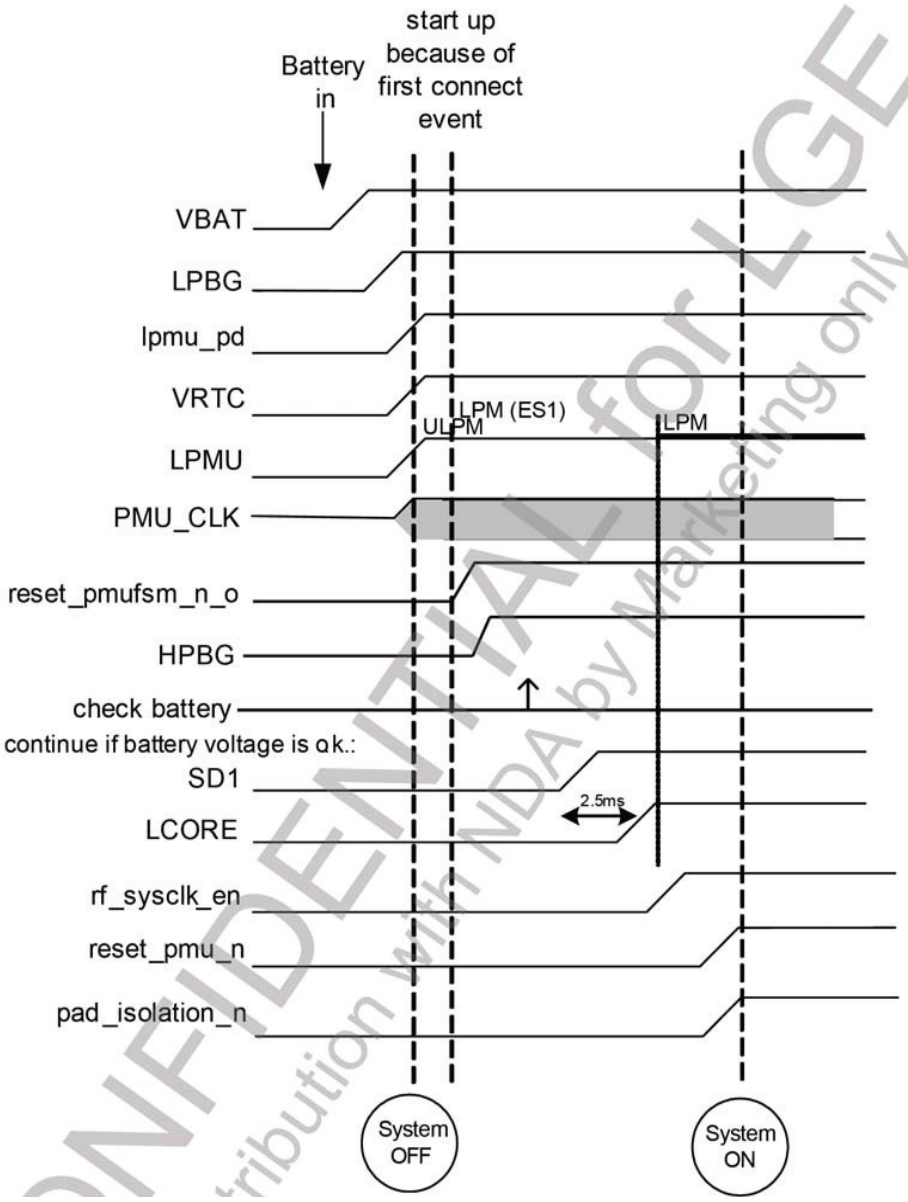


Figure 3.2.3 Start Up Sequence (triggered by First Connect Event)

3.2.7 External Reset Handling

The chip reset can be controlled by an external RESET_N ball. If this ball is pulled low, the chip will be reset. All PMU registers are reset during the external reset including LSIM control bits. The PMU statemachines are also not reset from the external reset. An SW or watchdog reset will not reset the PMU registers. A SW and Watchdog reset is seen on the reset_n pad to allow the reset of external devices. Basically there are three reset sources, first the reset signal controlled by the PMU (reset_pmu_n_o), second the reset signal controlled by the SCU (resetout_o) and third the external reset (RESET_N). The SCU reset is triggered by SW (for example due to a SW reset or watchdog reset). The PMU reset is controlled by the PMU state machine. The output of the reset handling block is the reset_postscu_n_o signal. This signal controls for example the μC subsystem and releases reset for the controller. During normal start up, the PMU releases the reset_pmu_n_o signal after entering the SYSTEM ON state. At this time the resetout_o signal is high, the RESET_N pad is not pulled low and therefore the reset_postscu_n_o signal follows the reset_pmu_n_o signal. That means the μC reset will be released and the μC starts operation. If the SW triggers an external reset via the SCU, signal resetout_o will be forced to low for a certain time and RESET_N will be forced to low by the open drain driver. At the same time the feedback to the SCU will be masked to not reset the baseband. The RESET_N pad is in the VDDRTC domain but the internal pull up is connected to the VDD_VDIG1 (1.8V) domain. That allows the pad to be used as reset for external devices running in the VDD1V8 domain. The RESET_N pad can also be used to monitor the chip internal reset condition during startup.

The open drain driver is a weak driver, that means it can be forced to high during debug from external pushing some current into the pad. In testmode signal reset_pmu_n_o is high, that means the chip reset is fully controlled from external

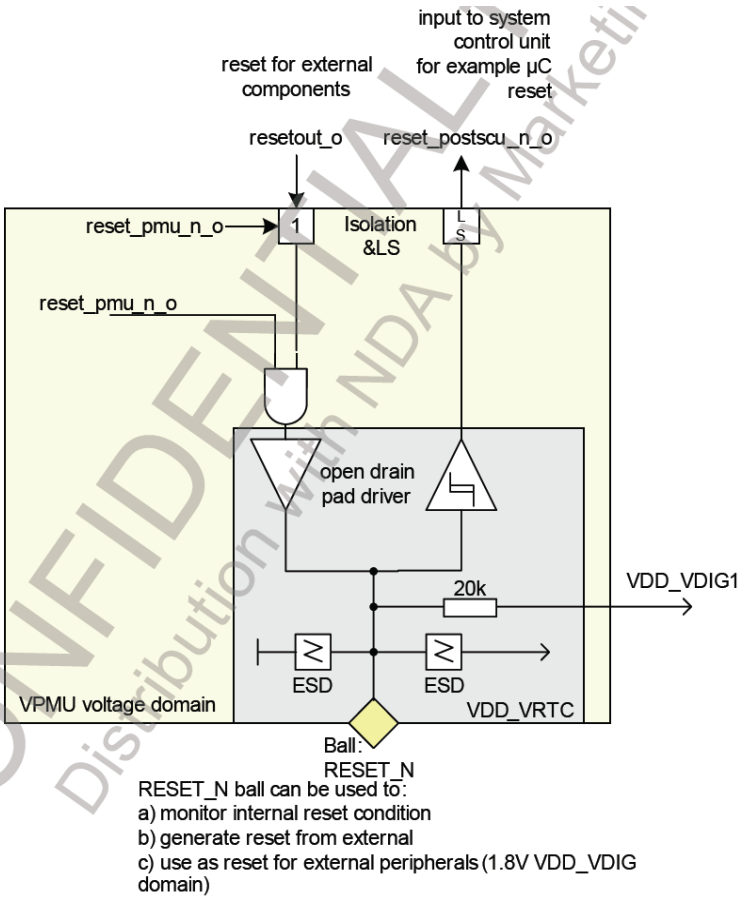


Figure 3.2.4 PMU, CGU and External Reset

3.2.8 Sysclock Switching

The PMU controls the rf_sysclk_en signal of the DCXO in the RF macro. During startup the PMU enables the DCXO. After the system is running the DCXO is controlled by the SCU of the baseband by using the vcxo_enable signal. This is handled by a dedicated logic in the PMU, see **Figure 21**. As long as rf_sysclk_en_pmu, the output of the PMU state-machine is high, vcxo_enable controls the rf_sysclk_en signal to the RF. If rf_sysclk_en_pmu is low, the DXCO is switched off, independent from vcxo_enable.

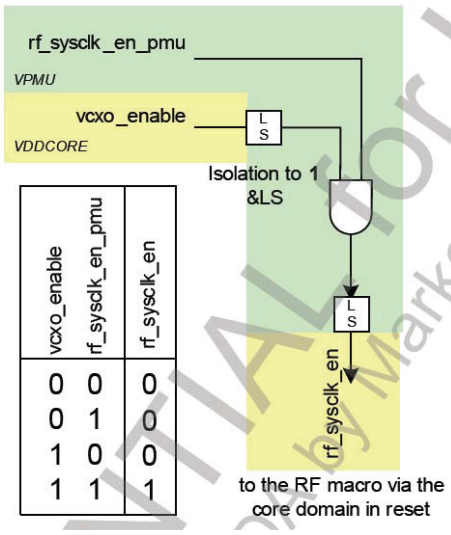


Figure 3.4.2 How sysclock Enable is Routed in the PMU

3.2.9 Undervoltage Shutdown

In active mode the PMU periodically measures the battery voltage using the ADC from the charger unit. If the battery is measured to be below the programmable shut-down level (called SYSOFF), the system changes to OFF mode. This is done via the SHUTDOWN state of the PMU state machine. (see chapter switch OFF)

3.2.10 Software Reset

A software reset does not affect any PMU register. The PMU register are reset with the reset_pmufsm_n_o signal. That means all PMU register are reset in OFF state. For details about the SW reset see chapter **External Reset Handling**

3.2.11 PMU Clock

During the first startup (for example plugging in a battery) a PMU internal oscillator is used for generation of the PMU clock (pmu_clock). The frequency is slightly above 32 kHz (typ. 50 kHz) to be out of the audio band also for worst case devices. After first startup the software shall enable the 32 kHz crystal oscillator. It is not possible to use the 32 kHz oscillator during first startup, because the settling time of the oscillator can be quite long. After the 32 kHz oscillator is running and settled the software shall switch the PMU clock to the 32 kHz clock and disable the internal PMU oscillator for power saving reasons. The 32 kHz oscillator shall never be disabled after the PMU clock has been switched. The ADC in the charger unit has it's own oscillator generating a frequency of about 10 MHz. This oscillator is running during charging and during battery measurements triggered by the PMU. It is off otherwise.

3.2.12 System Sleep Mode

The sleep mode is controlled by using the VCXO_enable signal. This signal is used to switch the LDO's and the DC/DC converter SD1 in a programmable way into its low power mode (PFM). In addition DC/DC converter SD1 can be configured to change the output voltage to a lower value for additional power saving. VCXO_enable is also used to deactivate the HPBG and setting LDO LPMU in the ultra-low-power mode. In addition the DCXO is switched off by the VCXO_enable signal. The VCXO_enable signal is also used to switch some LDO's (software configured) to sleep and/or off mode or to change the output voltages of said LDO's. The state of the main PMU state machine is not changed due to VCXO_enable.

3.2.13 DC/DC Pre-Load Register Handling

The DC/DC converter works in different modes. If the mode is switched from PFM to PWM the pulse-width of the DC/DC converter depends on the current battery voltage (and on the output voltage). The PMU state-machine knows the battery voltage because of the battery supervision function. Depending on this value it selects a startup pulse-width for the DC/DC converter out of a register table. (4-values)

3.2.14 Power Down Sequence

Setting bit OFF in the GeneralControl register switches the system into OFF mode. After the turn off event, the state-machine switches to the SHUTDOWN state. The reset_pmu_n_o signal changes to low, the I/O pads are isolated using the padisolation_n signal, the LCORE LDO and the SD1 DC/DC converter are switched off, the LPMU LDO is switched to ultra-low power mode, the DCXO is turned off and the bandgap buffer is disabled. Before switching OFF the software shall have enabled the 32 kHz oscillator and has switched the PMU clock to the 32 kHz clock to archive the target OFF current

3.3 FEM with integrated Power Amplifier Module (SKY77531, U400)

3.3.1 Internal Block Diagram

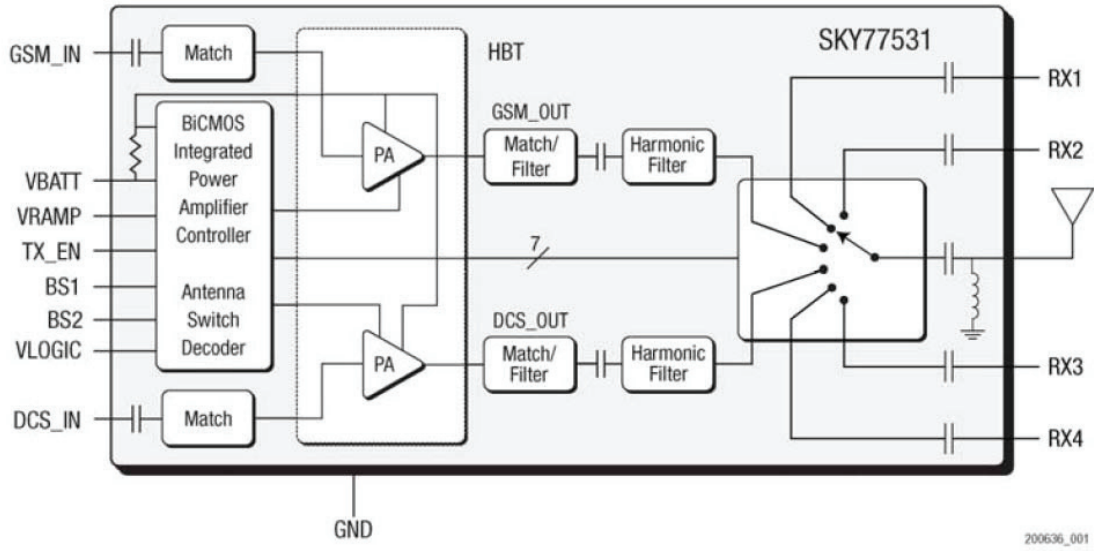


Figure. 3-3-1 SKY77318 FUNCTIONAL BLOCK DIAGRAM

3.3.2 General Description

The SKY77531 is a transmit and receive front-end module (FEM) with Integrated Power Amplifier Control for quad-band cellular handsets comprising GSM850/900 and DCS1800/PCS1900 operation. Designed in a low profile, compact form factor.
The FEM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.
The module consists of a GSM850/900 PA block and a DCS1800/PCS1900 PA block, impedance matching circuitry for 50 Ω input and output impedances, TX harmonics filtering, high linearity and a low insertion loss PHEMT RF switch, and a Power Amplifier Control (PAC) block with internal current sense resistor. A custom BiCMOS integrated circuit provides the internal PAC function and decoder circuitry to control the RF switches. The two Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto a single Gallium Arsenide (GaAs) die. One PA block supports the GSM850/900 bands and the other PA block supports the DCS1800/PCS1900 bands. Both PA blocks share common power supply pads to distribute current. The output of each PA block and the outputs to the four receive pads are connected to the antenna pad through a PHEMT RF switch. The GaAs die, PHEMT die, Silicon (Si) die and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

Mode	VLOGIC	Input Control Bits		
		TX_EN	BS1	BS2
STANDBY	0	X	X	X
RX1	1	0	0	0
RX2	1	0	0	1
RX3	1	0	1	1
RX4	1	0	1	0
LB_TX	1	1	0	X
HB_TX	1	1	1	X

1. X = DON'T CARE
2. RX1, RX2, RX3, and RX4 are broadband receive ports and each supports the GSM850, GSM900, DCS, and PCS bands.

Figure 3.3.2 Band SW Logic Table

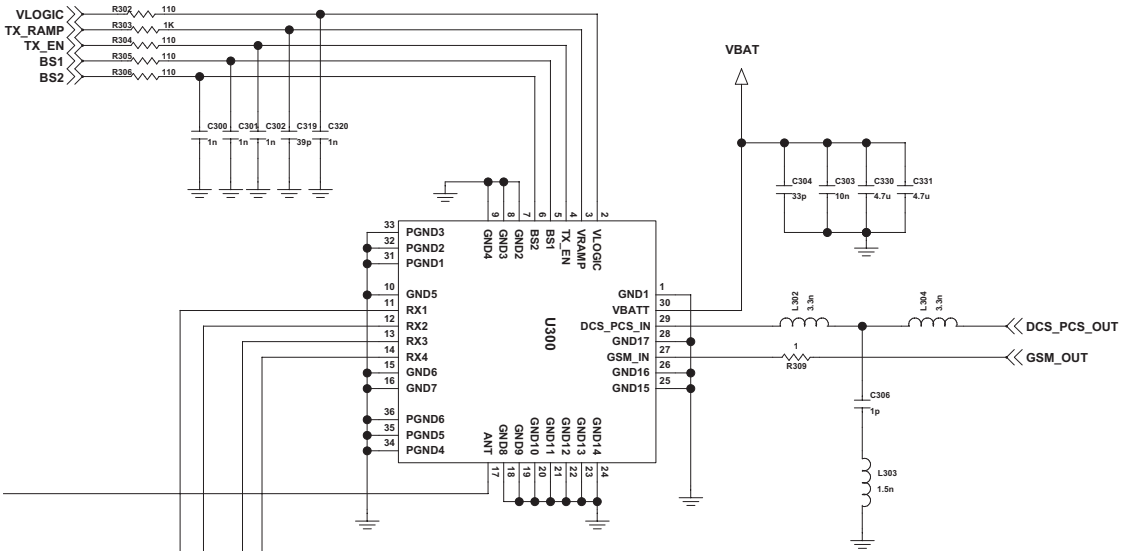
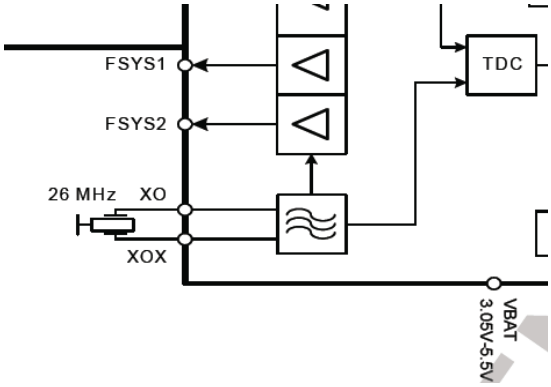


Figure 3.3.3 FEM CIRCUIT DIAGRAM

3.4 Crystal(26 MHz, X100)



The X-GOLDTM213 RF-Subsystem contains a fully integrated 26 MHz digitally controlled crystal oscillator, designed for 8 pF crystals. The only external part of the oscillator is the crystal itself. Overall pulling range of the DCXO is approximately ±55 ppm, controllable by a 13-bit tuning word.

This frequency serves as comparison frequency within the RF-PLL and as clock frequency for the digital circuitry.
The 26 MHz reference clock can also be applied to external components like Bluetooth or GPS, via the two buffered output signals FSYS1 and FSYS2

Figure. 3.4.1 Crystal Oscillator External Connection

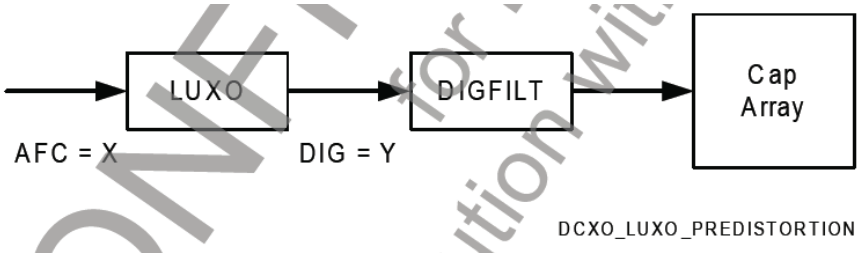


Figure. 3.4.2 Digital PREDISTORTION with LUXO

The DCXO tuning characteristic should be a first order linear function of the programming word AFC. The variable capacitance array is a first order linear function of the digital word DIG, which leads to a nonlinear curve ppm vs. DIG (and also a nonlinear ppm vs. AFC for DIG=AFC). In order to linearize the ppm vs. AFC curve the implementation of a predistortion is necessary.
To get the wanted linear ppm vs. AFC tuning curve some digital predistortion of the AFC word is required. This predistortion is performed by the linearization unit for crystal oscillator (LUXO). The LUXO calculates the corresponding DIG value according to the given AFC value.

3.5 RF Subsystem of PMB8810 (U100)

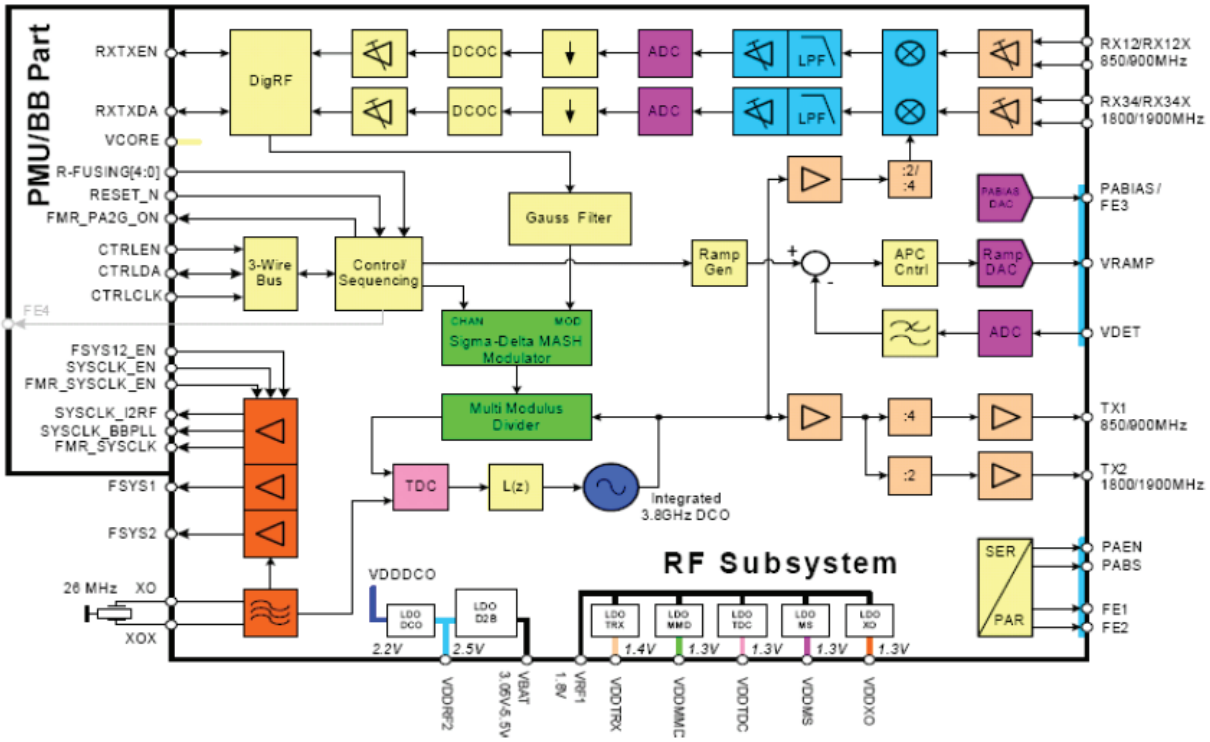


Figure. 3-5-1 Block DIAGRAM of RF Subsystem

3.5.1 GENERAL DESCRIPTION

The PMB8810 RF subsystem is designed for dual-band GSM voice and data applications (GPRS class 12). The system can be configured to support one low band, GSM850 or EGSM900, and one high band, DCS1800 or PCS1900. A block diagram of the RF subsystem is given in Figure 3-4-1.

3.5.2 FUNCTIONAL DESCRIPTION

3.5.2.1 Receiver

The X-GOLD™213 dual-band receiver is based on a Direct Conversion Receiver (DCR) architecture. Input impedance of the LNAs is optimized to achieve a matching without (external) high quality inductors. By use of frequency dividers (by 2/4) the LO frequency is derived from the RF frequency synthesizer.
The receive path is fully differential to suppress the on-chip interferences and reduce DC-offsets. The analog chain of the receiver contains two LNAs (low/high band), a quadrature mixer followed by an analog baseband filter and 14-bit continuous-time delta-sigma analog-to-digital converter. The filtered and digitized signal is fed into the digital signal processing chain, which provides decimation, DC offset removal and programmable gain control.

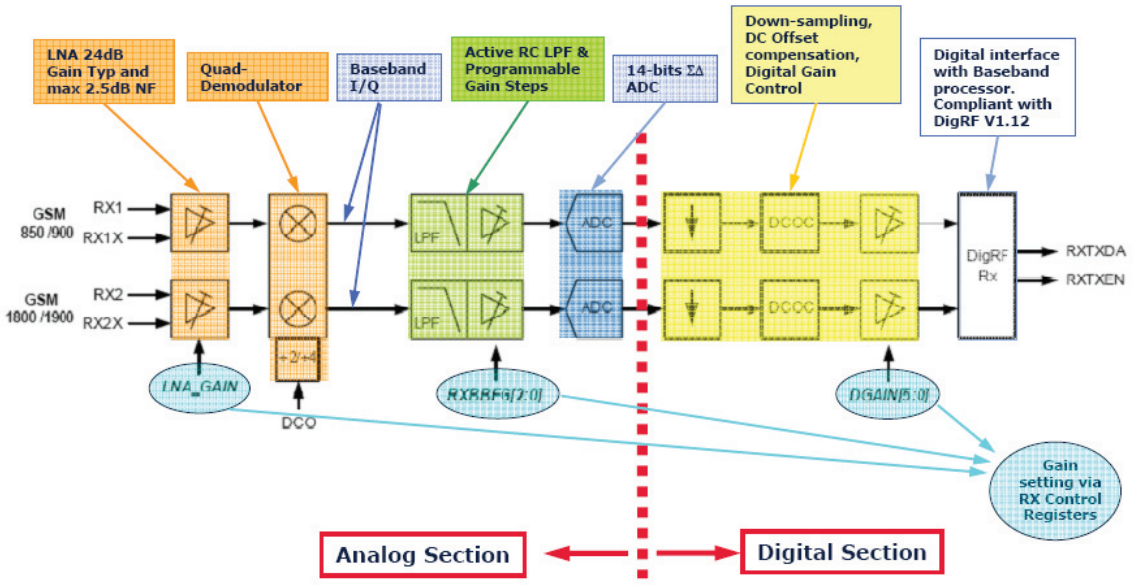


Figure. 3.5.2 RECEIVER CHAIN BLOCK DIAGRAM

3.5.2.2 Transmitter

The GMSK transmitter supports power class 4 for GSM850 or GSM900 as well as power class 1 for DCS1800 or PCS1900. The digital transmitter architecture is based on a fractional-N sigma-delta synthesizer for constant envelope GMSK modulation. This configuration allows a very low power design without any external components.
Up- and down-ramping is performed via the ramping DAC connected to VRAMP.

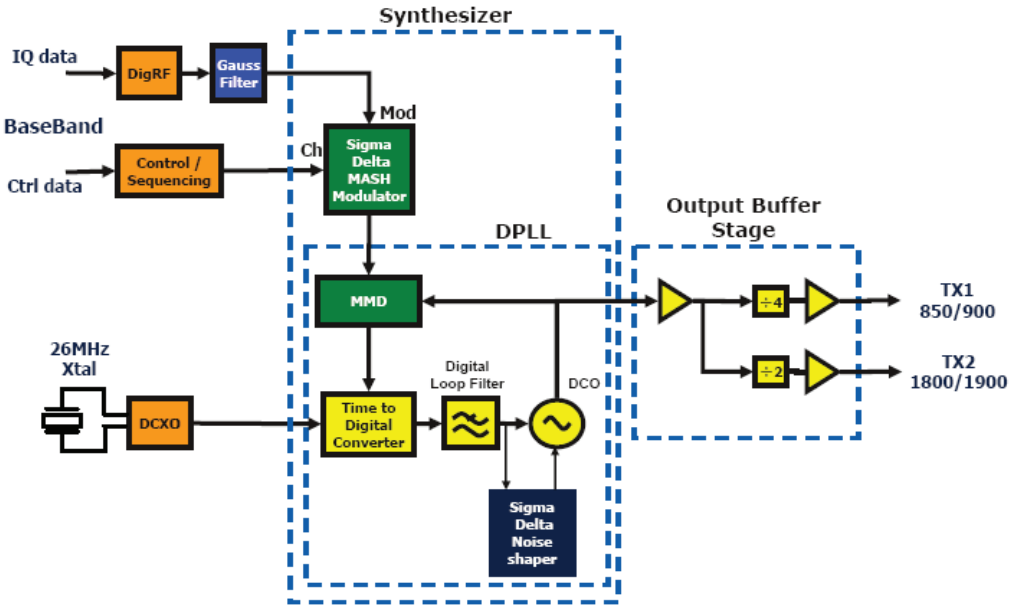


Figure. 3.5.3 TRANSMITTER CHAIN BLOCK DIAGRAM

RF synthesizer

The RF subsystem contains a fractional-N sigma-delta synthesizer for the frequency synthesis. Respective to the chosen band of operation the phase locked loop (PLL) operates at twice or forth of the target signal frequency. In receive operation mode the divided output signal of the digital controlled oscillator output (DCO) serves as local oscillator signal for the balanced mixer. For transmit operation the fractional-N sigma-delta synthesizer is used as modulation loop to process the phase/frequency signal. The 26 MHz reference signal of the phase detector incorporated in the PLL is provided by the reference oscillator.

3.5.2.3 Front-end/PA Control Interface

Two outputs (FE1, FE2) for direct control of antenna switch modules enable to select RX- and TX-mode as well as low- and high-band operation.
An extra band select signal PABS for the power amplifier is used, to support discrete PA and switching modules. Time accurate power dissipation of the PA is achieved by the control signal PAEN.
A minor set of power amplifiers require a bias voltage to enhance power efficiency. Support of this power amplifiers is achieved by the implemented bias DAC.

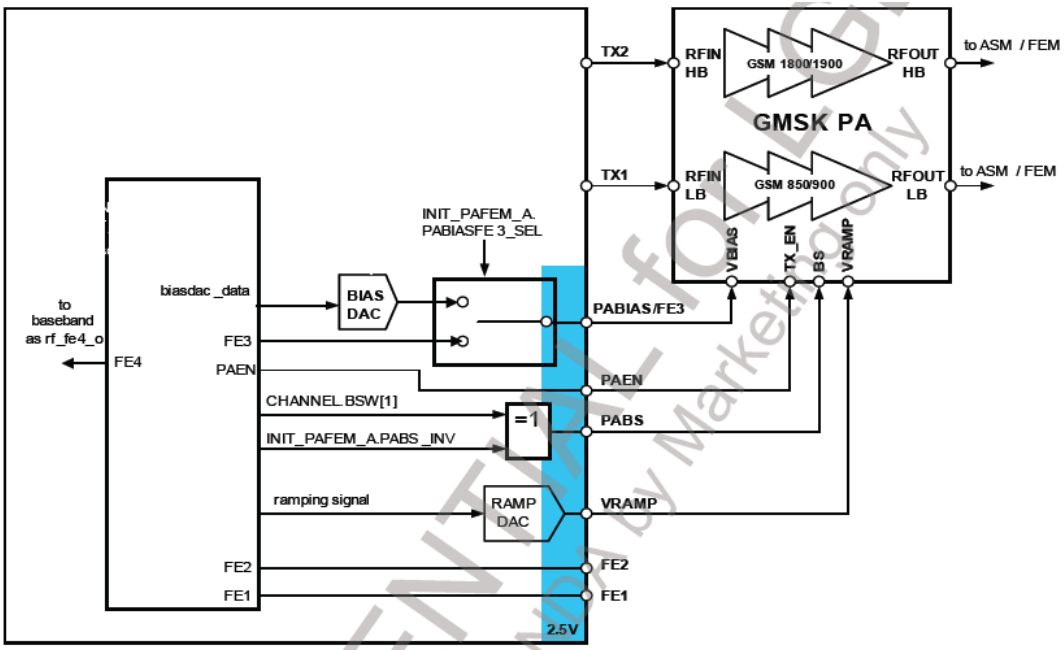


Figure. 3.5.4 PA AND FEM CONTROL BLOCK DIAGRAM

3.5.2.4 Power Supply

To increase power efficiency most parts of the RF subsystem are supplied by the DCDC converter situated in the PMU subsystem. Conversion of the 1.8 V output voltage of the DCDC to the 1.3 V/1,4 V circuit supply voltages is achieved by several Low-DropOut regulators (LDO).
One embedded direct-to-battery LDO provides the 2.5 V supply voltage for the remaining circuits.

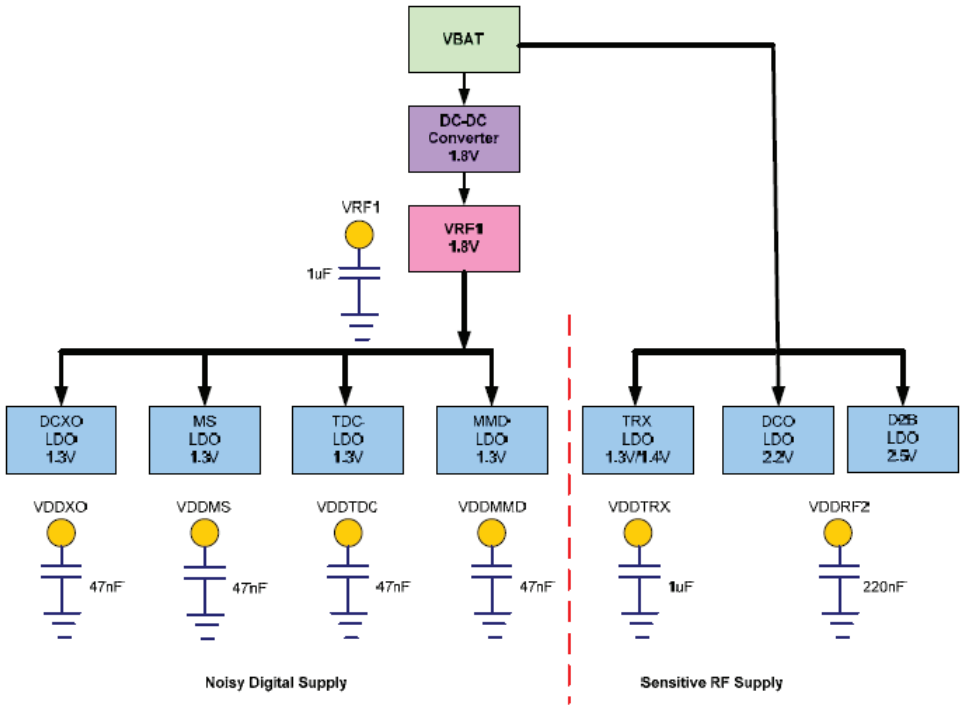


Figure. 3.5.5 POWER SUPPLY BLOCK DIAGRAM

3.6 MEMORY(PF38F5060M0Y0BE, U101)

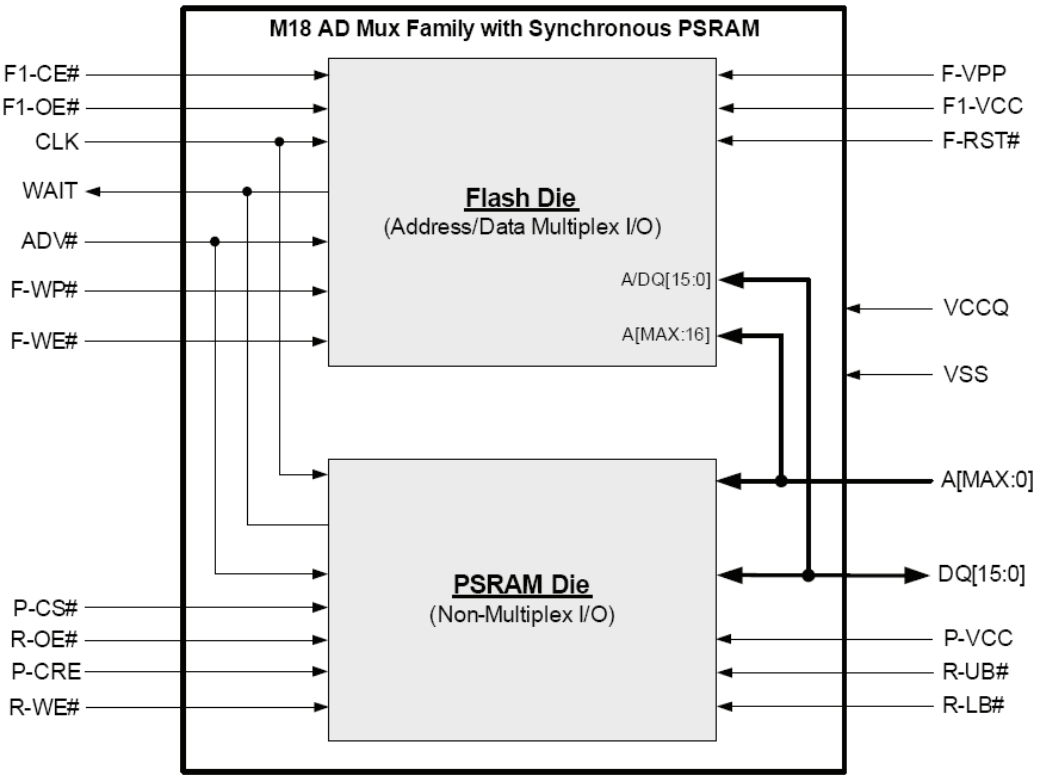


Figure. 3.6.1 MEMORY BLOCK DIAGRAM

The Numonyx™ StrataFlash® Cellular Memory (M18) device provides high read and write performance at low voltage on a 16-bit data bus.
The flash memory device has a multi-partition architecture with read-while-program and read-while-erase capability.
The device supports synchronous burst reads up to 108 MHz using ADV# and CLK address-latching (legacy-latching) on some litho/density combinations and up to 133 MHz using CLK address-latching only on some litho/density combinations. It is listed below in the following table.

Litho (nm)	Density (Mbit)	Supports frequency up to (MHz)	Sync read address-latching
90	256	133	CLK-latching
	512	108	Legacy-latching
65	128	133	CLK-latching
	256	133	CLK-latching
	512	108	Legacy-latching
	512	133	CLK-latching
	1024	108	Legacy-latching
	1024	133	CLK-latching

Table 3_6_1 M18 Frequency combinations

In continuous-burst mode, a data Read can traverse partition boundaries.
Upon initial power-up or return from reset, the device defaults to asynchronous arrayread mode. Synchronous burst-mode reads are enabled by programming the Read Configuration Register. In synchronous burst mode, output data is synchronized with a user-supplied clock signal. A WAIT signal provides easy CPU-to-flash memory synchronization.
Designed for low-voltage applications, the device supports read operations with VCC at 1.8 V, and erase and program operations with VPP at 1.8 V or 9.0 V. VCC and VPP can be tied together for a simple, ultra-low power design. In addition to voltage flexibility, a dedicated VPP connection provides complete data protection when VPP is less than VPPLK.
A Status Register provides status and error conditions of erase and program operations.
One-Time-Programmable (OTP) registers allow unique flash device identification that can be used to increase flash content security. Also, the individual block-lock feature provides zero-latency block locking and unlocking to protect against unwanted program or erase of the array.
The flash memory device offers three power savings features:
• Automatic Power Savings (APS) mode: The device automatically enters APS following a read-cycle completion.
• Standby mode: Standby is initiated when the system deselects the device by deasserting CE#.
• Deep Power-Down (DPD) mode: DPD provides the lowest power consumption and is enabled by programming in the Enhanced Configuration Register. DPD is initiatied by asserting the DPD pin.

3.7 BT module

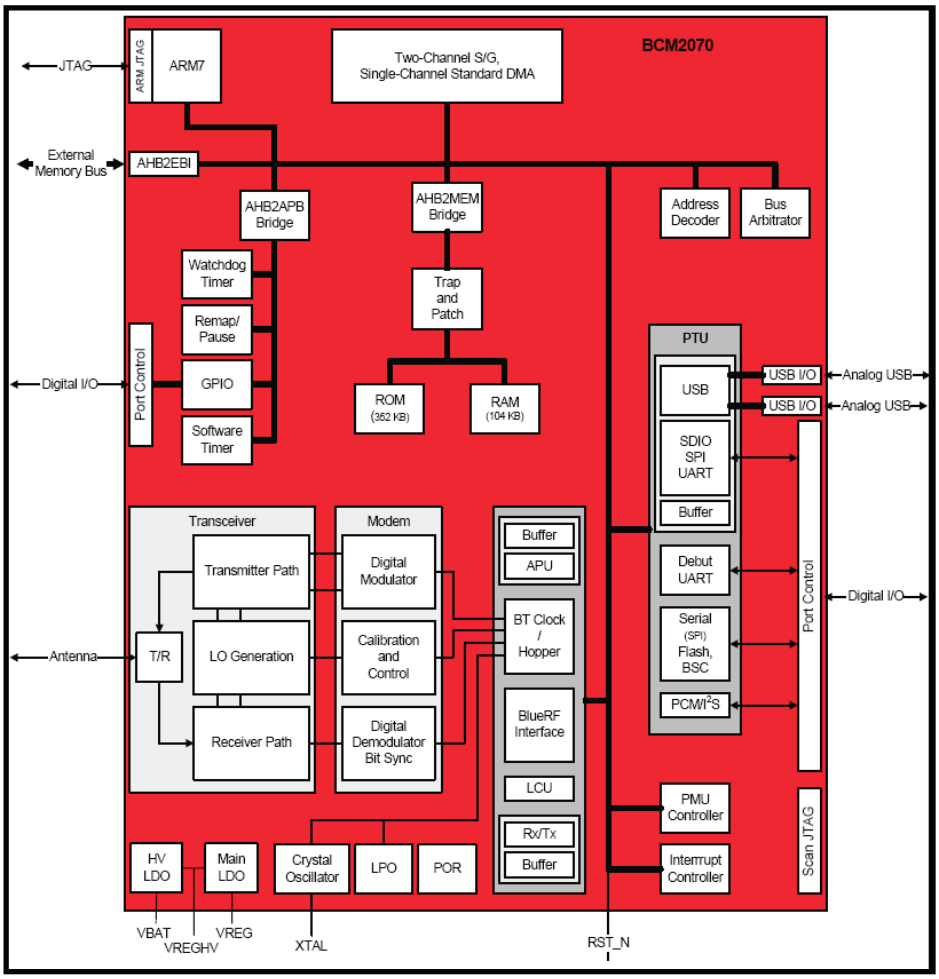


Figure 3_7_1. BT BLOCK DIAGRAM

This module has an integrated radio transceiver that has been optimized for use in 2.4GHz Bluetooth Wireless systems. It has been designed to provide low-power, robust communications for applications Operating in the globally available 2.4GHz unlicensed ISM band. It is fully compliant with the Bluetooth Radio Specification and enhanced data rate specification and meets or exceed the requirement to provide the highest communication link quality of service.

3.7.1 Transmitter path

This module features a fully integrated zero IF transmitter. The baseband transmitted data Is digitally modulated in the modem block and up-converted the 2.4GHz ISM band in the Transmitter path. The transmitter path consists of signal filtering, I/Q up-conversion, high-output power amplifier(PA), and RF filtering. It also incorporates modulation schemes P/4-DQPSK for 2 Mbps and 8-DPSK for 3 Mbps to support enhanced data rate.

• Digital modulator

The digital modulator performs the data modulation and filtering required for the GFSK, B/4DQPSK, and 8-DPSK signal. The fully digital modulator minimizes any frequency drift Or anomalies in the modulation characteristics of the transmitted signal and is much more Stable than direct VCO modulation schemes.

• Power Amplifier

The integrated PA for the BCM2070 is configurable for Class 2 operation, transmitting up to +4 dBm as well as Class 1 operation and transmit power up to +12 dBm at the chip, gFSK, >2.5V supply. Due to the linear nature of the PA, combined with some integrated filtering, no External filters are requires for meeting Bluetooth and regulatory harmonic and spurious requirements. For integrated mobile handset applications, where Bluetooth is integrated next to the celluar radio, minimal external filtering can be applied to achieve near thermal noise levels for spurious and radiated noise emissions.
Using a highly linearized, temperature compensated design the PA can transmit +12 dBm for Basic rate and +10 dBm for enhanced data rates(2 to 3 Mbps). A flexible supply voltage range Allows the PA to operate from 1.2V to 3.0V. The minimum supply voltage at VDDTF is 1.8V to achieve +10dBm of transmit power.

3.7.2 Receiver path

The receiver path uses a low IF scheme to down-convert the received signal for demodulation in the digital demodulator and bit synchronizer. The receiver path provides a high degree of Linearity, an extended dynamic range, and high order on-chip channel filtering to ensure reliable operation in the noisy 2.4GHz ISM bnad. The front-end topology, with built-in out-of-bnad attenuation, enables the device to be used in most applications with no off-chip Filtering. For integrated handset operation where the Bluetooth function is integrated close to the celluar transmitter, minimal external filtering is required to eliminate the desensitization of The receiver by the cellular transmit signal.

3.8 SIM Card Interface

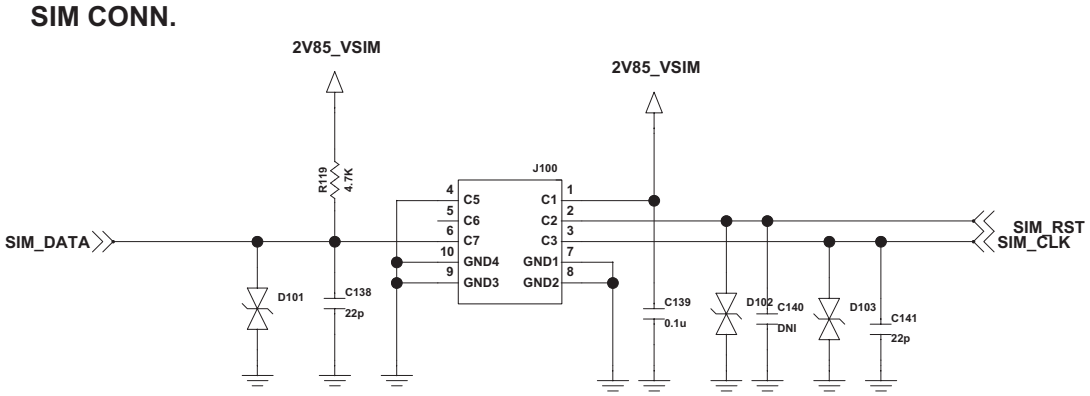


Figure 3-8-1. SIM CARD Interface

The Main Base Band Processor(XMM2130) provides SIM Interface Module.
The XMM2130 checks status Periodically During established call mode whether SIM card is inserted or not, but it doesn't check during deep sleep mode. In order to communicate with SIM card, 3 signals SIM_DATA, SIM_CLK, SIM_RST.
And This model supports 1.8/3V SIM Card.

Signal	Description
SIM_RST	This signal makes SIM card to HW default status.
SIM_CLK	This signal is transferred to SIM card.
SIM_DATA	This signal is interface datum.

3.9 LCD Interface

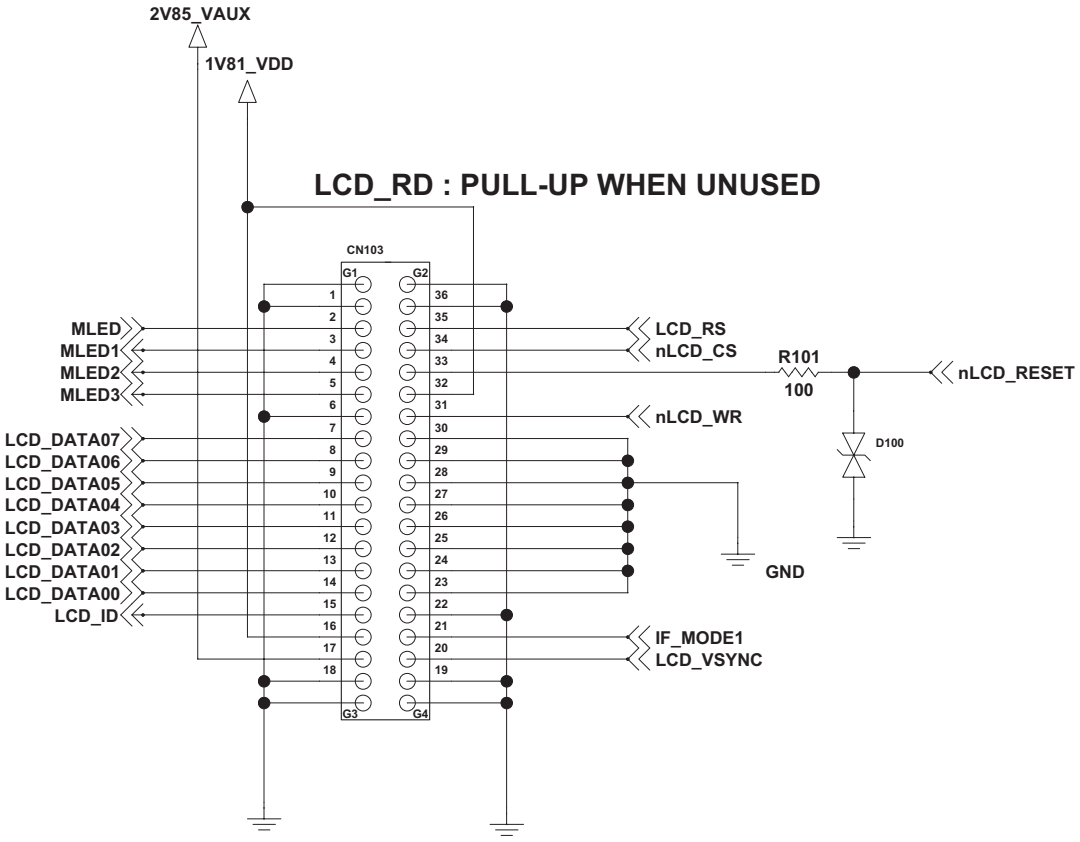


Figure 3-9-1. LCD Interface of LCD FPCB

The LH200J07-TH02 model is a Thin Film Transistor-Liquid Crystal Display without polarizer.
The matrix compose a-Si Thin Film Transistor as a active element.
It is a transmissive type display operating in the normally white mode. This TFT-LCD has 2.0 inch diagonally measured active display area with qCIF+ resolution (176xRGBx220 pixels)
Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical Stripes. The LH200J07-TH02 has been designed to apply the interface method that enables low power.
The LH200J07-TH02 is intended to support applications where thin thickness, low power are critical factors and graphic display are important. In combination with the vertical arrangement of the sub-pixels, the LH200J07-TH02 characteristics provide an High quality display for mobile phone application.

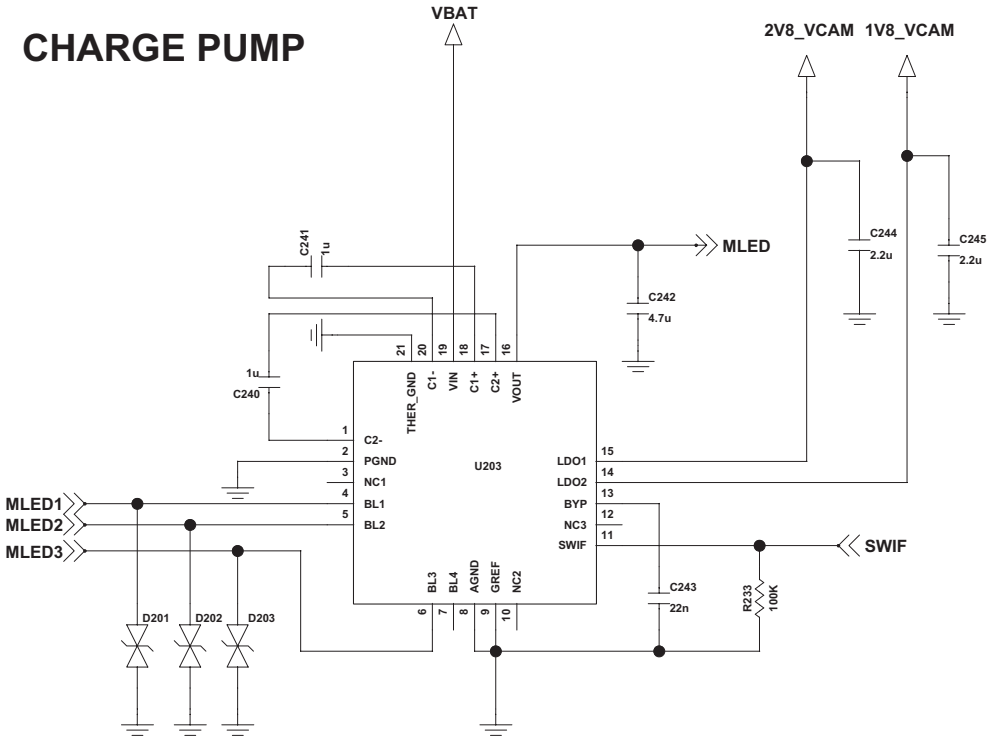


Figure 3-9-2. SC624 CIRCUIT DIAGRAM

The SC624 is a high efficiency charge pump LED driver using Semtech's proprietary mAhXLifeTM technology. Performance is optimized for use in single-cell Li-ion battery applications.

The charge pump provides backlight current in conjunction with four matched current sinks. The load and supply conditions determine whether the charge pump operates in 1x, 1.5x, or 2x mode. An optional fading feature that gradually adjusts the backlight current is provided to simplify control software. The SC624 also provides two low- dropout, low-noise linear regulators for powering a camera module or other peripheral circuits.

The SC624 uses the proprietary SemWireTM single wire interface. The interface controls all functions of the device, including backlight current and two LDO voltage outputs. The single wire implementation minimizes microcontroller and interface pin counts.

In sleep mode, the device reduces quiescent current to 100µA while continuing to monitor the serial interface. The two LDOs can be enabled when the device is in sleep mode. Total current reduces to 0.1µA in shutdown.

LED Backlight Current Sinks

The backlight current is set via the SemWire interface. The current is regulated to one of 32 values between 0.5mA and 25mA. The step size varies depending upon the current setting. Between 0.5mA and 12mA, the step size is 0.5mA. The step size increases to 1mA for settings between 12mA and 15mA and 2mA for settings greater than 15mA. This feature allows fi ner adjustment for dimming functions in the low current setting range and coarse adjustment at higher current settings where small current changes are not visibly noticeable in LED brightness.

All backlight current sinks have matched currents, even when there is variation in the forward voltages (△VF) of the LEDs. A △VF of 1.2V is supported when the input voltage is at 3.0V. Higher △VF LED mis-match is supported when VIN is higher than 3.0V. All current sink outputs are compared and the lowest output is used for setting the voltage regulation at the VOUT pin. This is done to ensure that suffi cient bias exists for all LEDs.

The backlight LEDs default to the off state upon powerup. For backlight applications using less than four LEDs, any unused output must be left open and the unused LED driver must remain disabled. When writing to the Backlight Enable Control register, a zero (0) must be written to the corresponding bit of any unused output.

Backlight Quiescent Current

The quiescent current required to operate all four backlights is reduced by 1.5mA when backlight current is set to 4.0mA or less. This feature results in higher efficiency under light-load conditions. Further reduction in quiescent current will result from using fewer than four LEDs.

3.10 Battery Charger Interface

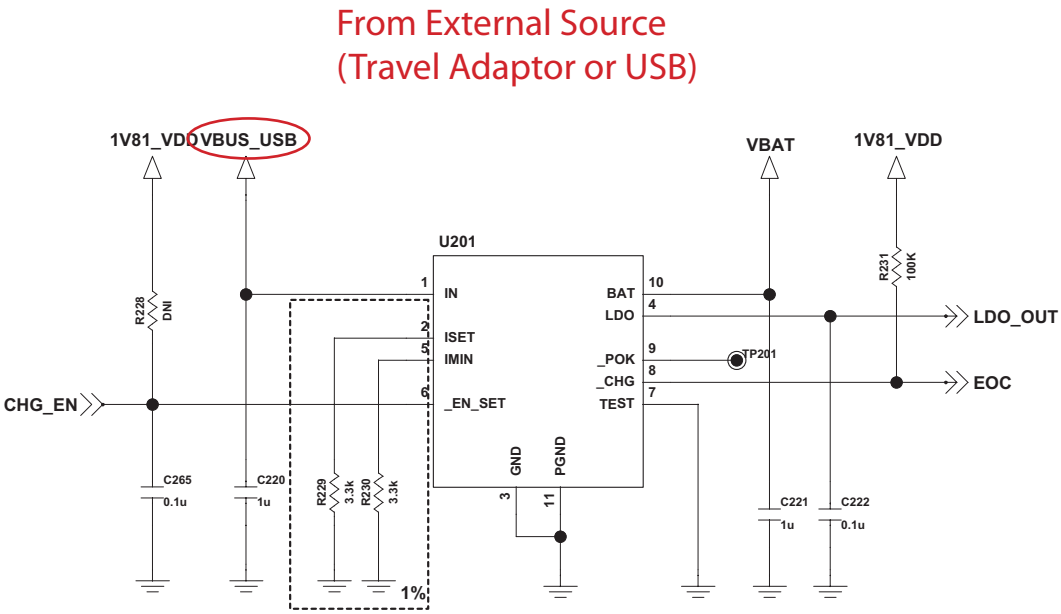


Figure 3-10-1 BATTERY CHARGER BLOCK

The MAX8922 linear battery chargers safely charges single-cell Li+ batteries.
Charging rate is optimized to accommodate the thermal characteristics of a given application.
There is no need to reduce the maximum charge current or worst-case charger power dissipation.
Charging is optimized for Li+ cells using a control algorithm that includes low-battery precharging, voltage and current-limited fast charging, and top-off charging, while continuously monitoring for input overvoltage and device over-temperature.
The charge current and termination threshold are programming by simple one wire serial interfaces.
The charger status is indicated by two open-drain outputs.

The AC adapter charger current is programming by external ISET1 resistor while USB charge current is programming either 90mA or 400mA through one wire interface.

The MAX8922 is available in the tiny 10pin 2mm by 3mm TDFN package.

3.11 Keypad Interface

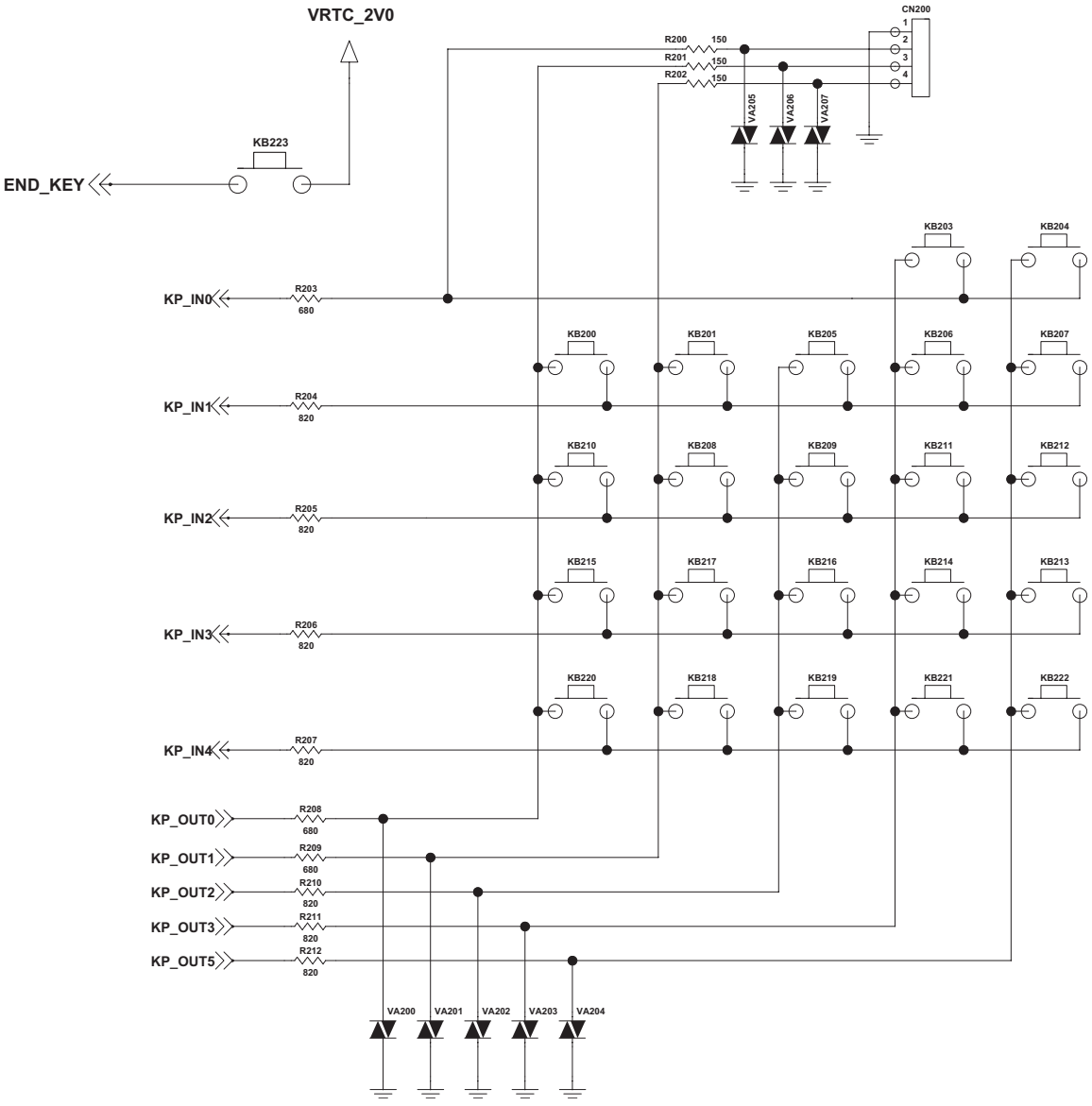


Figure 3-11-1 MAIN KEY STRUCTURE

The Keypad Interface is a peripheral controller, which can be used for scanning external keypad matrices with up to 8 rows and 8 columns (that is 64 standard keys). By adding an additional row of keys connected to ground the number of keys can be extended by up to 8 keys. This results in a maximum number of 72 keys to by identified by the Keypad Interface Controller.
The Keypad Scan Module reduces the number of interrupts and polling through the processor and therefore reduces the power consumption. The module is able to debounce and scan the external keypad matrix automatically without any software intervention. After debouncing it generates an interrupt. The interface controller contains information about the key (or key combination) that was pressed and how long it was pressed.

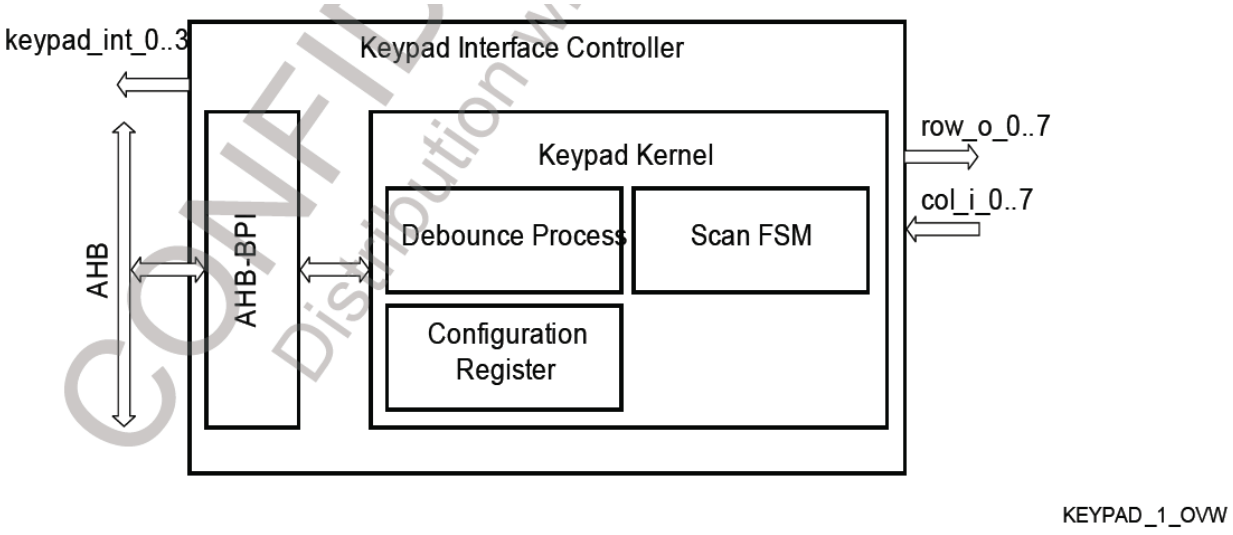


Figure 3-11-3 Block Diagram and System Integration of the KPD

3.12 Audio Front-End

3.12.1 Functional Overview

The audio front-end of X-GOLD™213 offers the digital and analog circuit blocks for both receive and transmit audio operation, from a mobile phone perspective (called audio-in and audio-out subsequently). It features a high-quality, stereo digital-to-analog path with amplifier stages for connecting acoustic transducers to X-GOLD™213. In audio-in path the supply voltage generation for electret microphones, a low-noise amplifier and analog to digital conversion are integrated in X-GOLD™213. A more detailed functional description will be given in the following sections.

The audio front-end itself can be considered to be organized in three sub-blocks:
• Interface to processor cores (TEAKLite® and - indirectly - ARM)
• Digital filters
• Analog part

The following figure shows an architecture overview of the Audio section.

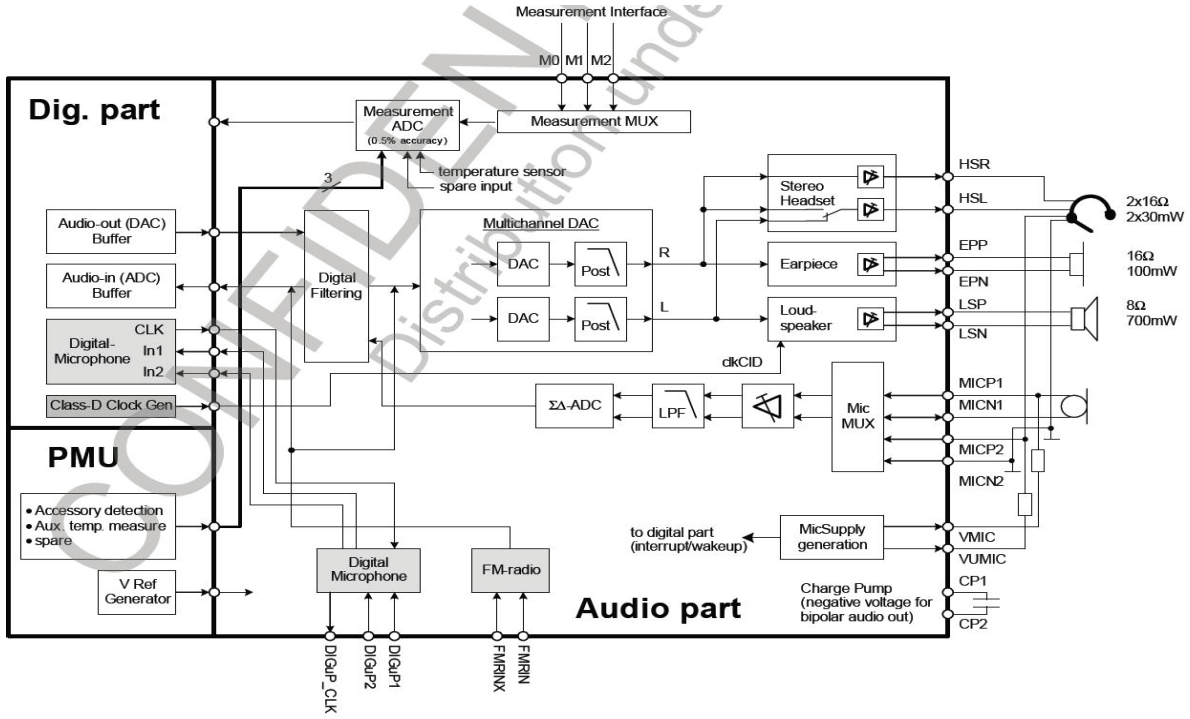


Figure 3.12.1 Audio Section Overview

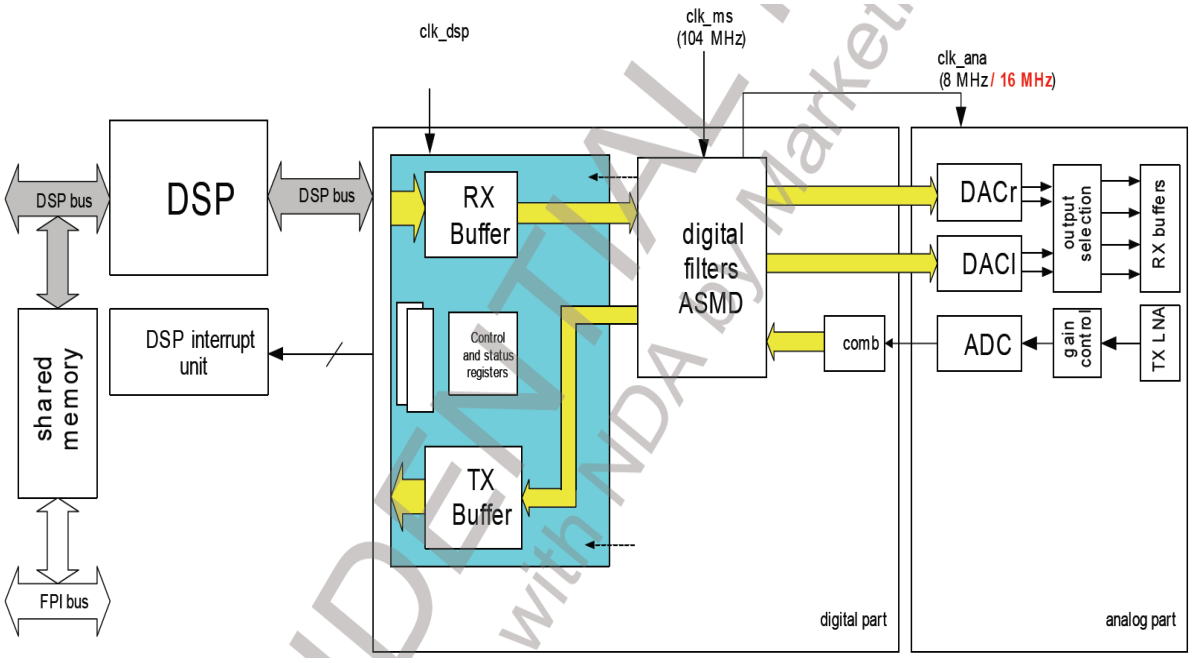


Figure 3.12.2 Overview of Clocking and Interfaces of Audio Front End

The audio front-end of X-GOLD™213 has the following major operation modes:

• Power-down: All analog parts are in power down and all clocks of the digital part are switched off.
• Audio mode: Digital decimation/interpolation filters are connected to the interface buffers and the analog part is enabled.

These major modes can be modified by certain control register settings.

• Due to the new gain settings in the TX path, the maximum input voltage is limited to 0.8 Vpp.
• In both voiceband paths, the value range for voice samples is confined to 97.5%, i.e. to [-31948, 31947] or [8334H, 7CCBH] in X-GOLD™213.
• On the TX path, 83% "1"s on the VTPDM line correspond to a 16-bit value of 7CCBH and 17% "1"s correspond to a 16-bit value of 8334H at the digital filter output. Thus the usable range is 66%. This range can be scaled to 100% by Firmware.
• The high-pass functions of the voiceband filters have to be implemented in firmware on TEAKLite®.

3.12.2 Digital Part

The digital part of the X-GOLD™213 audio front-end comprises an interface to the TEAKLite® bus, interfaces to the interrupt units of TEAKLite®, digital interpolation filters for oversampling digital-to-analog conversion, digital decimation filters for analog-to-digital conversion and an interface to the analog part of the audio front-end. For the digital microphone all the filtering is done in a dedicated hardware. The output sample stream is then fed in a duplicated ring buffer structure like the data from the analog microphone path (after A/D conversion and subsequent digital filtering).

▪ Interpolation Filter

The interpolation path of the X-GOLD™213 audio front-end increases the sampling rate of the audio samples to the rate of the digital-to-analog converter. Because the input sampling rates can vary between 8 kHz and 47.619 kHz the filter characteristic and oversampling ratio can be adjusted to the respective sampling rate. The requirements for the interpolation filters depend on the sampling rate, because a sufficient out-of-band discrimination in the audio frequency band (20 Hz,...,20 kHz) has to be ensured.

▪ Decimation Filter

The digital decimation filter on X-GOLD™213 has two operating modes: 8 kHz output sampling rate and 16 kHz output sampling rate (or 16 kHz output sample rate and 16kHz bandwidth in case of doubled ASMD clock).

3.12.3 Analog Part

The analog part of the X-GOLD™213 audio front-end in audio-out direction consists of a stereo digital to analog converter (multi-bit oversampling converter) which transforms the output of the digital interpolation filter into analog signals. It is followed by the gain control/amplifier section. The DAC outputs can be switched to several output buffers. In audio-in section there is an input multiplexer which selects either one of two differential microphone inputs to be connected to the low-noise amplifier and analog pre-filter. The signals from the analog pre-filter are input to a second-order sigma-delta analog-to-digital converter. In addition there is a connection for FM-radio playing.

▪ Audio-out Part

The analog audio-out part consists of two multi-bit digital-to-analogue converters (DAC) and an output stage. The signal sources are switched to the output drivers in the output stage. The output drivers consist of: a) one mono, differential class-D Loudspeaker driver, b) one mono, differential Earpiece driver and c) one stereo, single-ended (with uni- or bipolar signals), Headset driver.

▪ Digital-to-analog converters

The multi-bit oversampling DACs of the X-GOLD™213 audio front-end convert the 16-bit data words coming from the digital interpolation filters to analogue signals.

▪ Output Amplifier

The different output buffers in X-GOLD™213 are driven by the outputs of the selection block. The differential earpiece driver can be used to drive a 16 Ω earpiece and works in differential. The two single ended headset drivers can be used to drive a 16 Ω headset. They can work unipolar mode, where an AC coupling of the headset might be needed, or can work also in bipolor mode. The differential loudspeaker driver can be used to drive a 8 Ω loudspeaker. As it is a class-D amplifier the needed suppression of the higher harmonics of the switching signals
has to be achieved by the external circuitry. The buffers are designed to be short circuit protected.

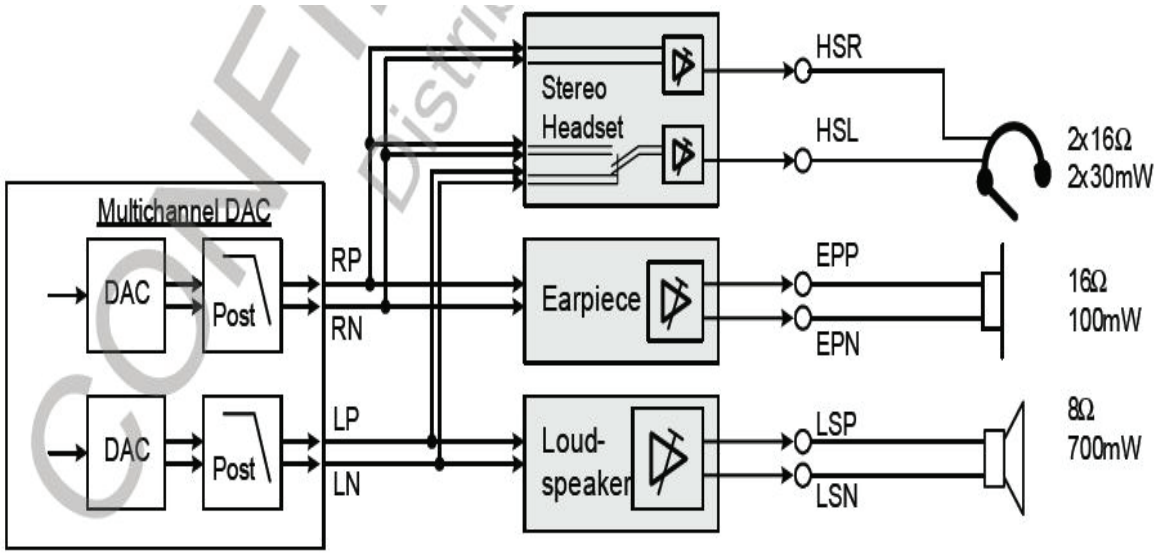


Figure 3.12.3 Switching for R/L DACs onto Buffers

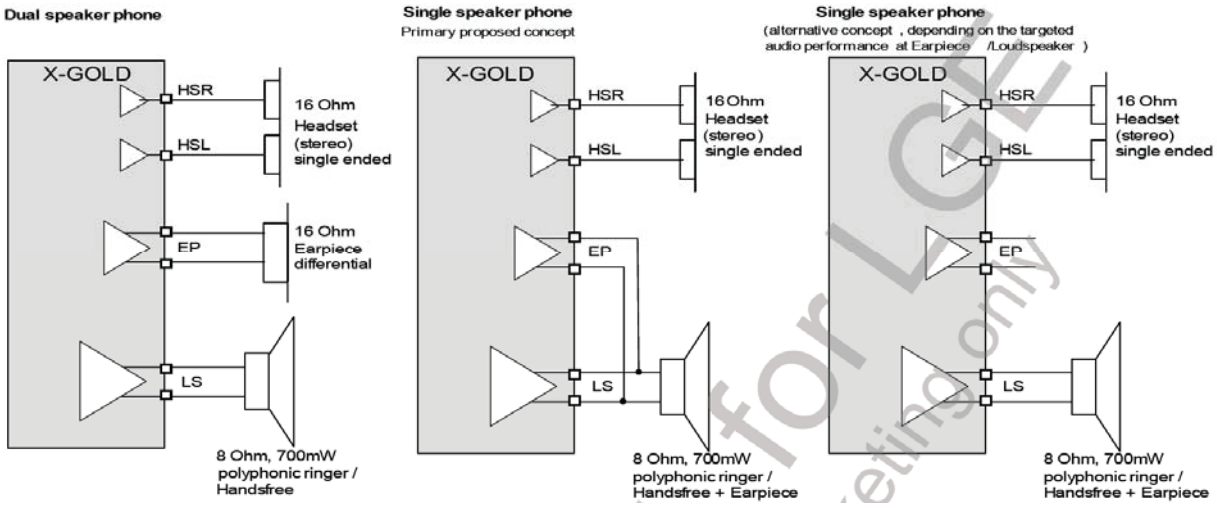


Figure 3.12.4 Different Application Scenarios

In order to achieve the single-speaker concept by parallel connection of Earpiece and Headset amplifier the Earpiece amplifier have to sustain the up to 5 V voltage of the class-D amplifier.

▪ Audio-in Path

The audio-in path of X-GOLD™213 provides two differential microphone input sources, MIC1and MIC2.

• The inputs for microphone MIC1 are MICP1 and MICN1.
• The inputs for microphone MIC2 are MICP2 and MICN2.

The audio-in path consists of an input selector, a low noise amplifier and following pre-filter with gain control, a second order ΣΔ-converter and a digital decimation filter. It supports both standard GSM (bandwidth 3.5 kHz) and wideband (bandwidth 7 kHz) speech bands.
The differential input signal from the microphone first passes a low noise amplifier and following pre-filter and an anti-aliasing pre-filtering stage achieving and overall variable gain ranging from 0 dB to +39 dB . The signal is then modulated by a second order ΣΔ-converter which is clocked with the same clock rate as the digital to analog converters. The ΣΔ-converter delivers a 1-bit pulse density modulated data stream at a rate of 2 MHz to the digital decimation filter which reduces the rate to 8 kHz or 16 kHz, depending on the current mode.
To improve SNR the sample frequency can be doubled in dedicated modes and the modulated data stream is 4MHz instead of 2 MHz.

▪ Microphone Supply

X-GOLD™213 has a single ended power-supply concept for electret microphones:
For both modes a minimal load capacitance of t.b.d. nF is necessary to guarantee stable operation of the buffer.
The maximal load capacitance must not exceed t.b.d. nF.
2 microphone supplies VMIC and VUMIC are available. The supply VUMIC has a ultra-low-power mode, where the current consumption is minimum, whilst at the same time the noise performance is reduced. For this purpose the VUMIC is directly supplied out of the VMIC regulator, the Mic-Buffer can be switched off and only the quiescent current of the VMIC regulator is present. This mode can be used to supply a headset and allow accessory detection with highly reduced current consumption For normal operation the supply can be switched to normal operation mode with improved noise performance. In case of an digital microphone VMIC can be used for supplying this microphone.

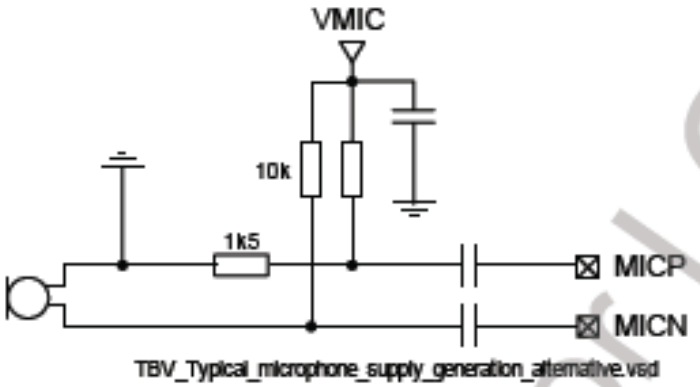


Figure 3.12.5 Typical Microphone Supply Generation (alternative)

3.13 Camera Interface(2M Fixed Focus Camera)

3.13.1 PMB8810 Camera Interface

The Camera Interface (CIF) represents a complete video and still picture input interface (see Figure 26).

The CIF contains image processing, scaling, and compression functions. The integrated image processing unit supports image sensors with integrated YC_bC_r processing.
Scaling is used for downsizing the sensor data for either displaying them on the LCD, or for generating data streams for MPEG-4 compression. In general, YC_bC_r 4:2:2 JPEG compressed images should use the full sensor resolution, but they can also be downscaled to a lower resolution for smaller JPEG files. Scaling also can be used for digital zoom effects, because the scalers are capable of up-scaling as well.
CIF All data is transmitted via the memory interface to an AHB bus system using a bus master interface. Programming is done by register read/write transactions using an AHB slave interface.

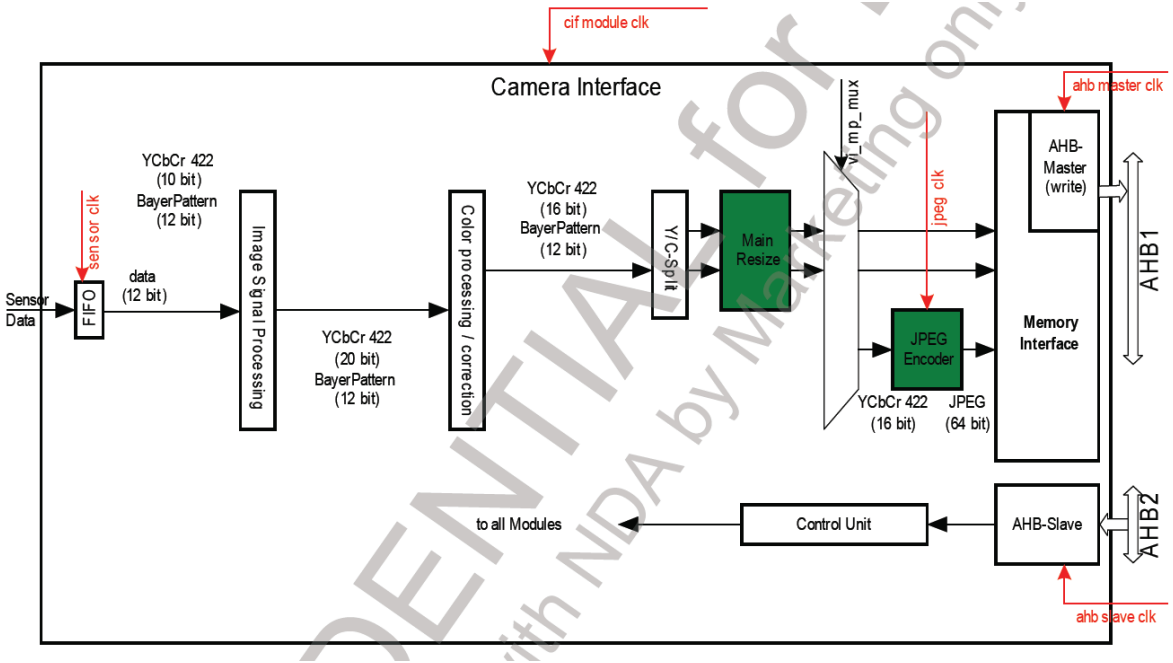


Figure 3.13.1 Block Diagram of Camera Interface

Functional Overview of CIF

The following list gives an overview over the CIF's functionality:

- 78 MHz system clock
- 78 MHz sensor clock
- 78 MHz JPEG encoder clock
- 32-bit AHB slave programming interface
- ITU-R BT 601 compliant video interface supporting YC_bC_r
- ITU-R BT 656 compliant video interface supporting YC_bC_r data
- 8-bit camera interface
- 12-bit resolution per color component internally
- YC_bC_r 4:2:2 processing
- Hardware JPEG encoder incl. JFIF1.02 stream generator and programmable quantization and Huffman tables
- Windowing and frame synchronization
- Continuous resize support
- Frame skip support for video (e.g. MPEG-4) encoding
- Macro block line, frame end, capture error, data loss interrupts and sync. (h_start, v_start) interrupts
- Programmable polarity for synchronization signals
- Luminance/chrominance and chrominance blue/red swapping for YUV input signals
- Maximum input resolution of 3 Mpixels (2048x1536 pixels)
- Main scaler with pixel-accurate up- and down-scaling to any resolution between 3 MP (2048x1536) and 32x16
- pixel in processing mode
- Buffer in system memory organized as ring-buffer
- Buffer overflow protection for raw data and JPEG files
- Asynchronous reset input, software reset for the entire IP and separate software resets for all sub-modules
- Interconnect test support
- Semi planar storage format
- Color processing (contrast, saturation, brightness, hue)
- Power management by software controlled clock disabling of currently not needed sub-modules

3.14 KEY BACLKLIGHT LED Interface

Key Backlight LED is controlled by switch (Q200). If KEY_BL_EN is high, Current is flowing from VBAT to LED. Then Light emitted from The LED.
KEY_BL_EN is operating PWM. It is reducing current consumption.

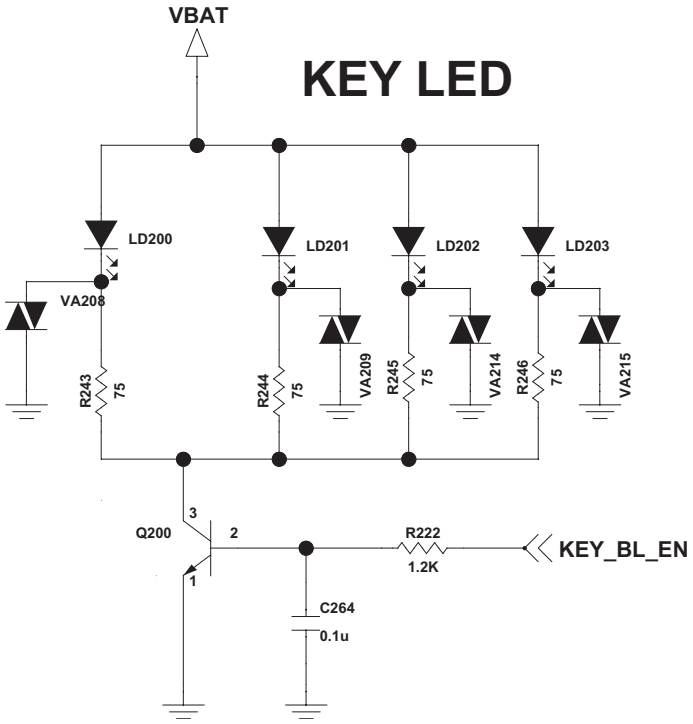


Figure 3-14-1 Key Backlight Block

3.15 Vibrator Interface

Support PWM signal which generated by hardware itself via register control
Direct connect to the VIB and VSSVIB pin from XMM2130 without any external component required
It is capable to driver the vibrator motor up to 150mA

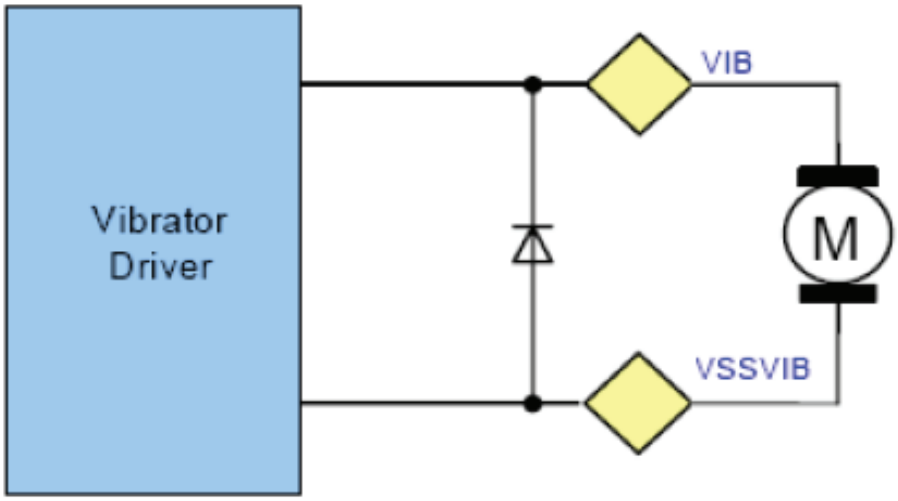


Figure 3-15-1 Vibrator Driver Block Diagram

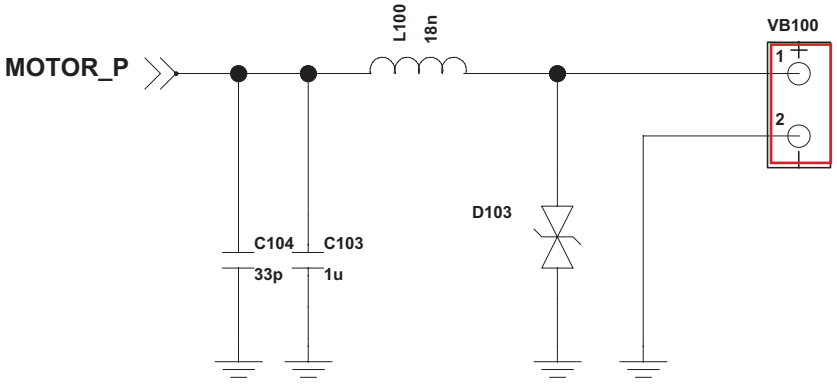


Figure 3-15-2 Vibrator Driver Block

3.16 Folder SW Interface

Hall sensor respond to the magnetic field. If it is used for mobile phones, It is used for opening of the folder.
A little magnet attached to the folder. If folder is opened, Hall sensor is ON.
Therefore, to see whether the opening of the folder.

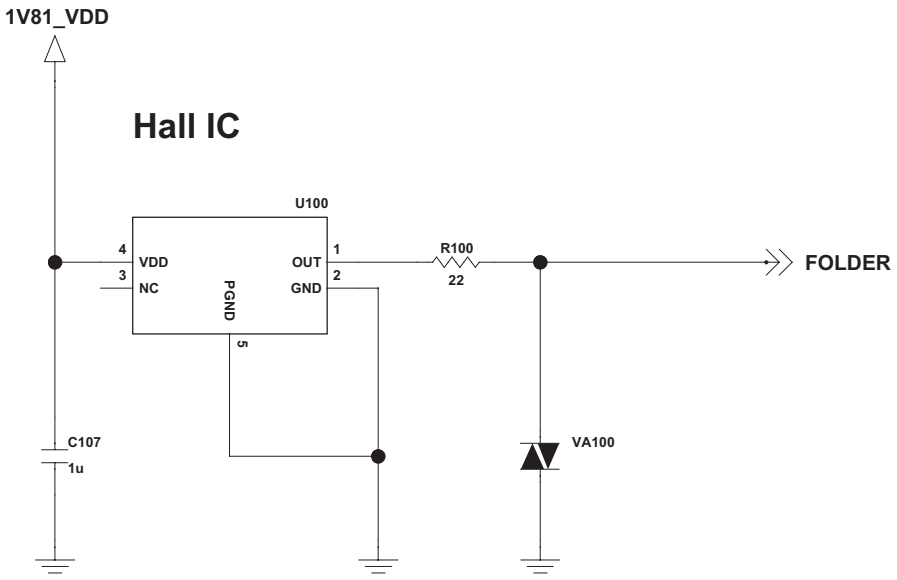


Figure 3-16-1 Hall effect switch Block Diagram

3.17 Sub Display (LED Module) SW Interface

LED Module is interfaced to BB IC with I2C.
- Illumination Color : RED
- Display Surface : 7.5mm x 27.9mm
- Number of Dots : 115 (23x5 dot)
- Pitch between dots : 1.2mm

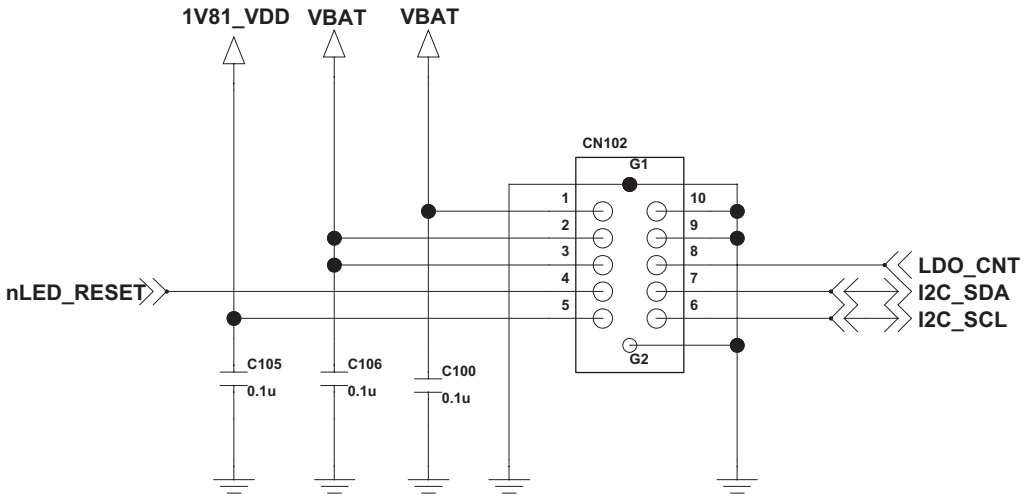


Figure 3-17 LED Module Interface

4. TROUBLE SHOOTING

4.1 RF Component

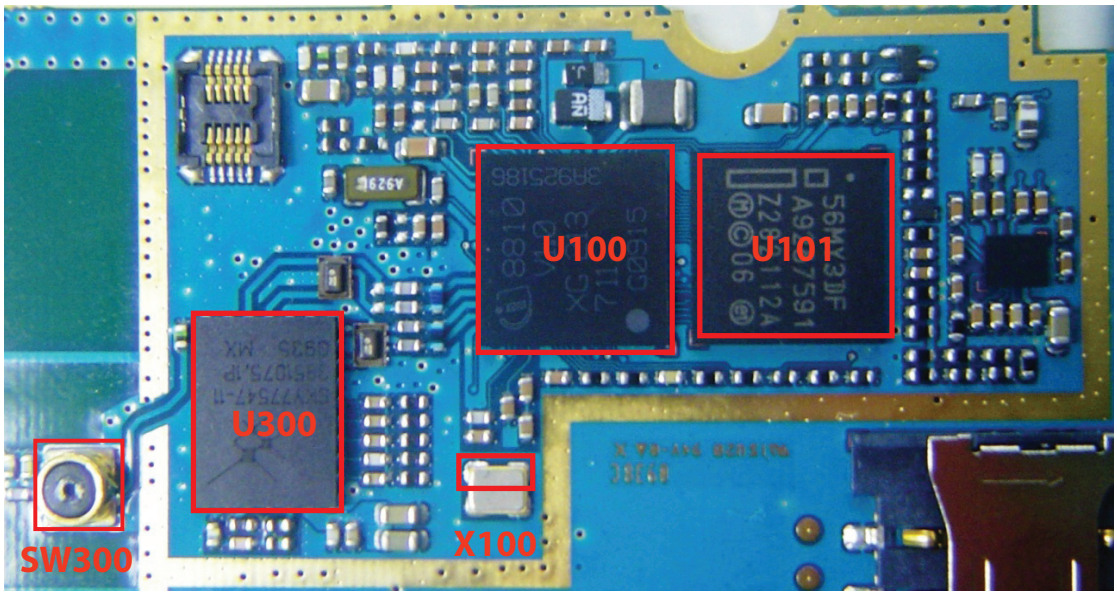
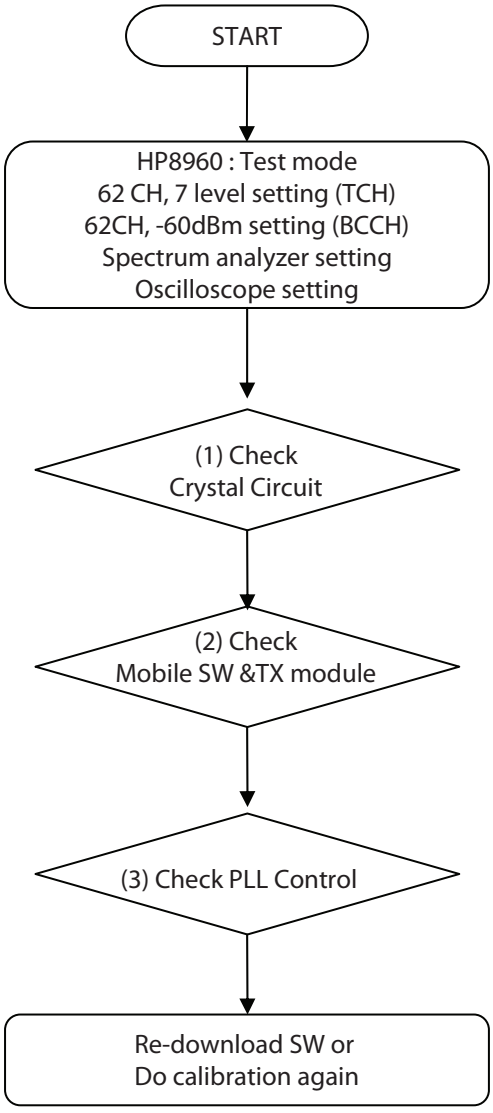


Figure 4.1

U101	Memory(512NOR/128pSDRAM) PF38F5060M0Y3DF
U100 (PMB8810)	Main Chip (A-GOLDRADIO)
U300	FEM(Tx Module)
X100	Crystal, 26MHz Clock

4.2 RX Trouble

CHECKING FLOW



(1) Checking Crystal Circuit

TEST POINT

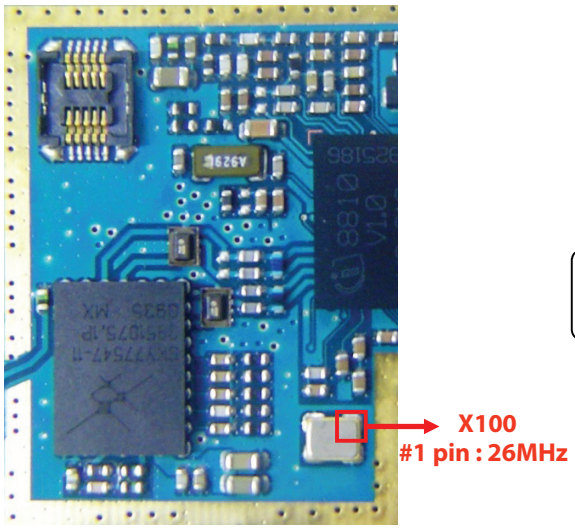
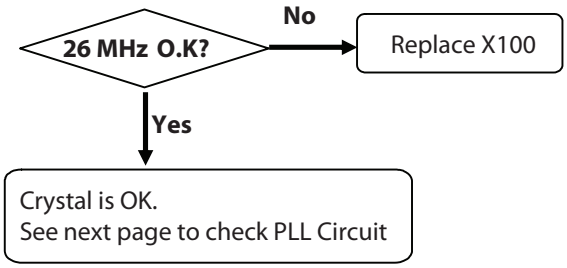


Figure 4.2.1

CHECKING FLOW



CIRCUIT

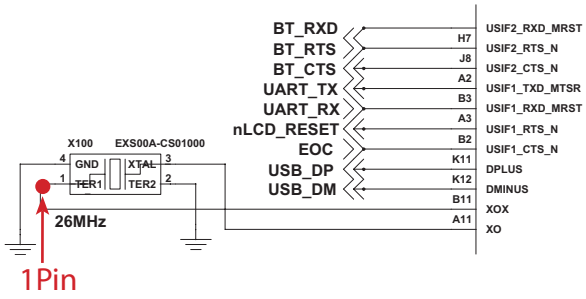


Figure 4.2.2

WAVEFORM

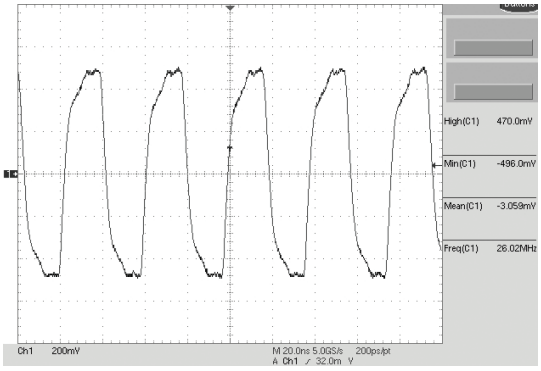
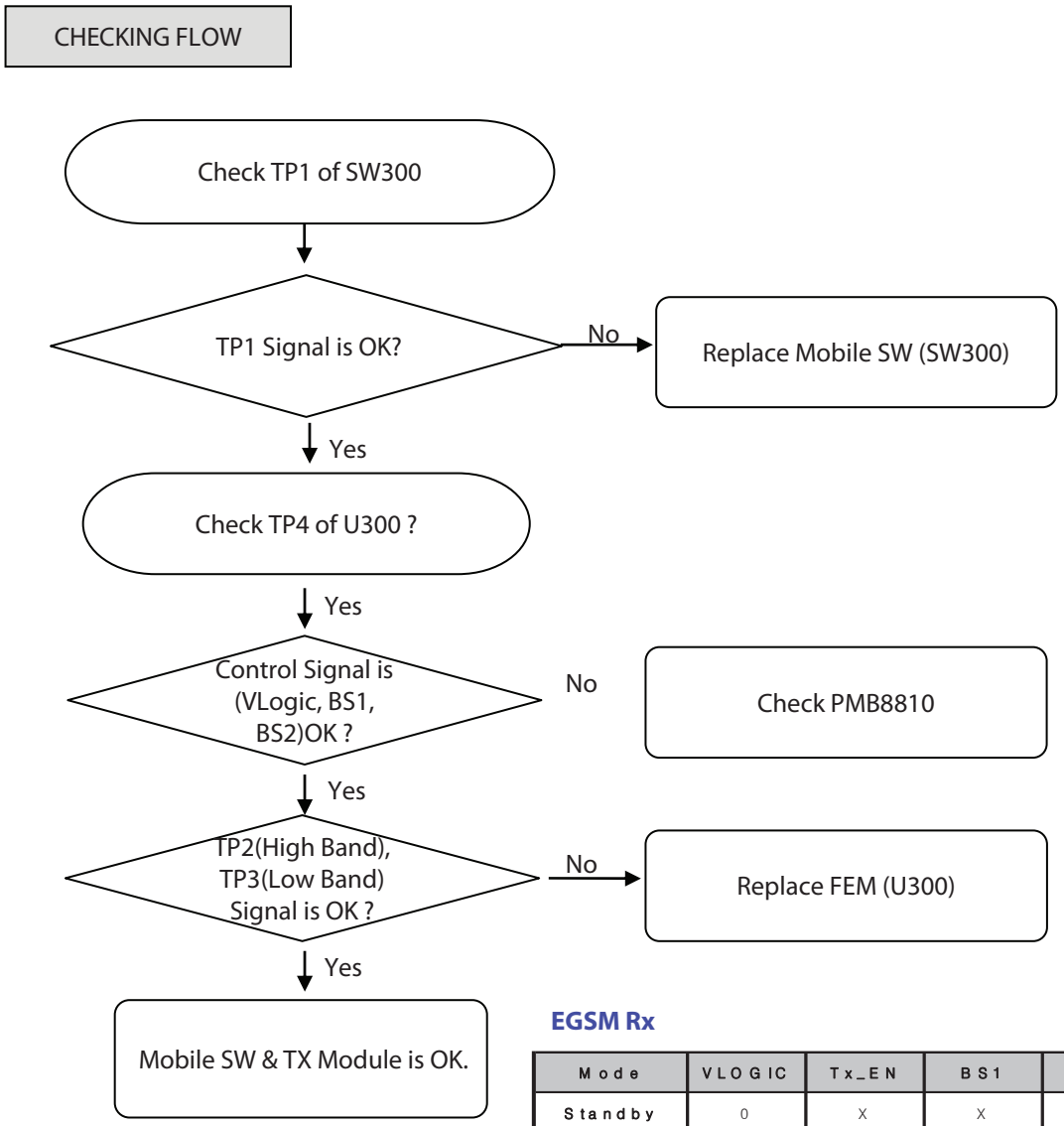


Figure 4.2.3

(2) Checking Mobile SW &FEM



EGSM Rx

Mode	VLOGIC	Tx_EN	BS1	BS2
Standby	0	X	X	X
Rx1 (GSM850)	1	0	0	0
Rx2 (EGSM)	1	0	0	1
Rx3 (DCS)	1	0	1	1
Rx4 (PCS)	1	0	1	0
LB_Tx	1	1	0	X
HB_Tx	1	1	1	X

TEST POINT

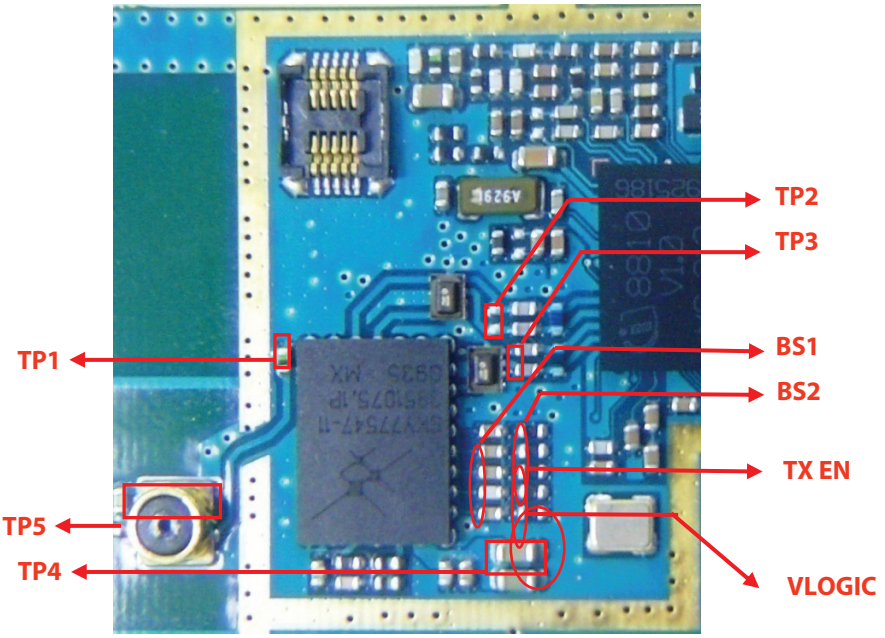
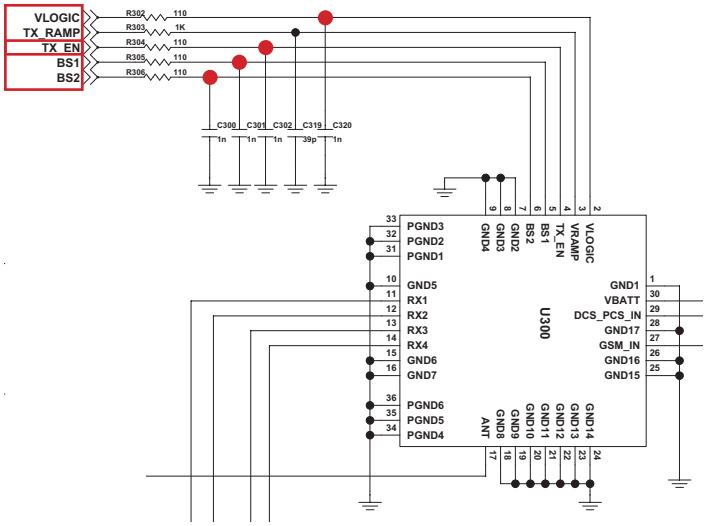


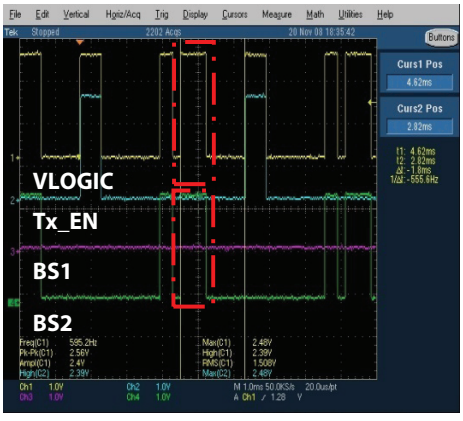
Figure 4.2.4

CIRCUIT



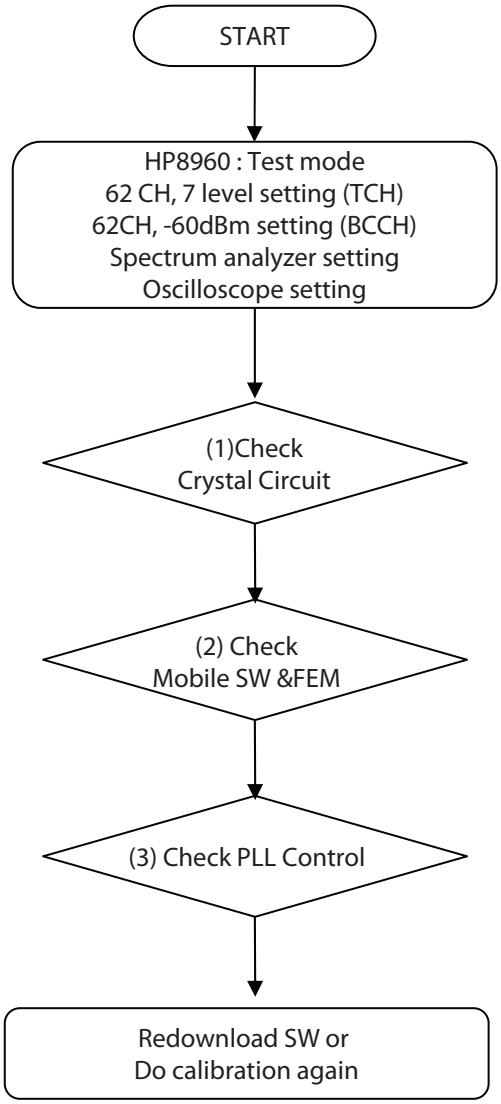
CONTROL LOGIC

EGSM Rx



4.3 TX Trouble

CHECKING FLOW



(1) Checking Crystal Circuit

TEST POINT

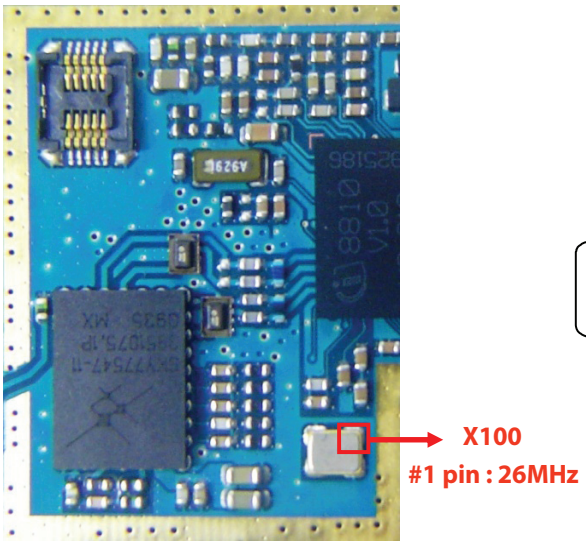
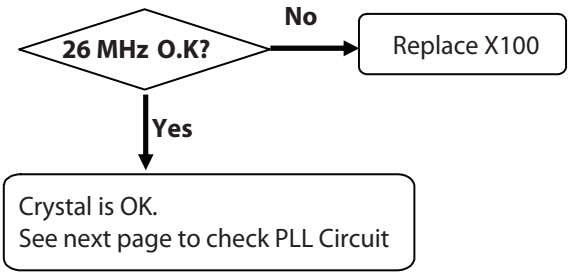


Figure 4.3.1

CHECKING FLOW



CIRCUIT

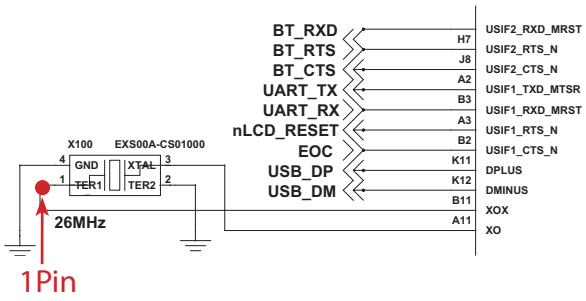


Figure 4.3.2

WAVEFORM

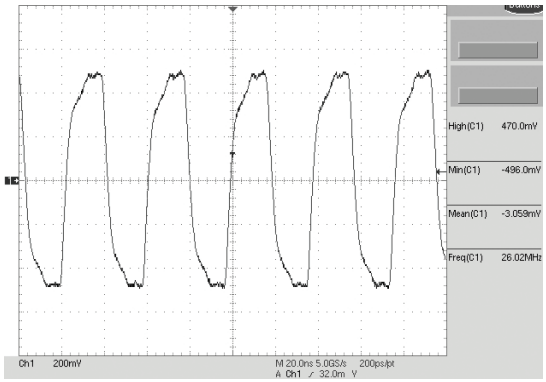
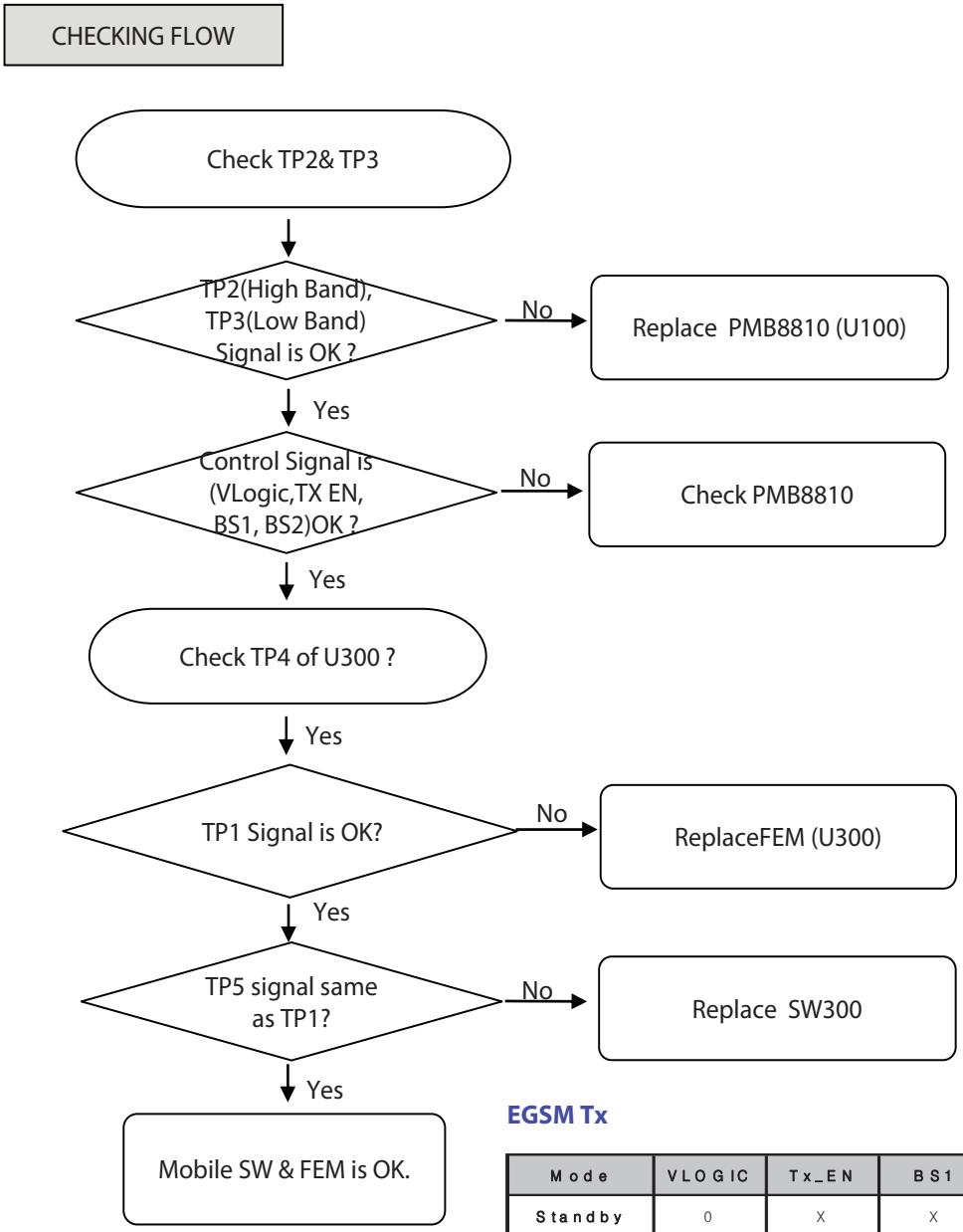


Figure 4.3.3

(2) Checking Mobile SW & TX Module



EGSM Tx

Mode	VLOGIC	Tx_EN	BS1	BS2
Standby	0	X	X	X
Rx1 (GSM850)	1	0	0	0
Rx2 (EGSM)	1	0	0	1
Rx3 (DCS)	1	0	1	1
Rx4 (PCS)	1	0	1	0
LB_Tx	1	1	0	X
HB_Tx	1	1	1	X

TEST POINT

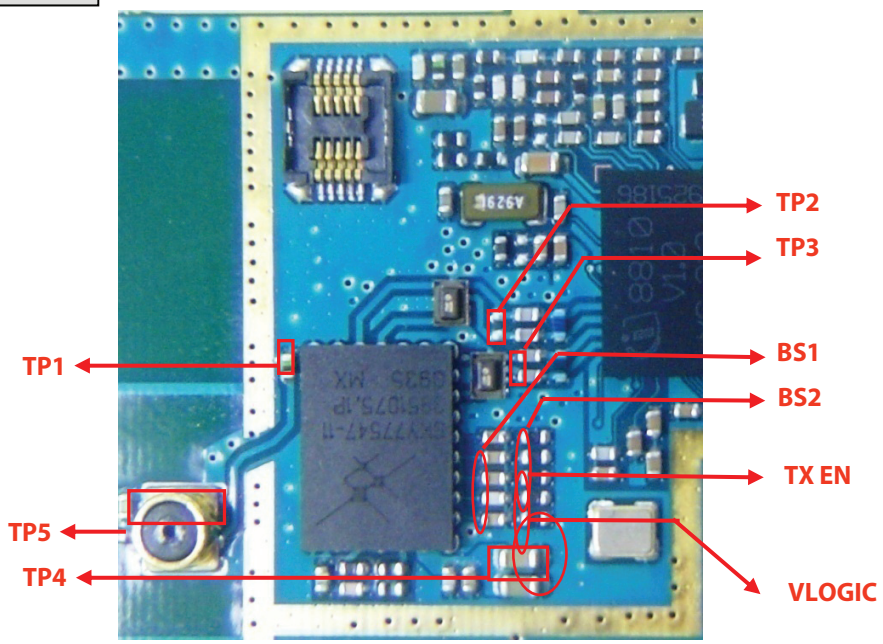
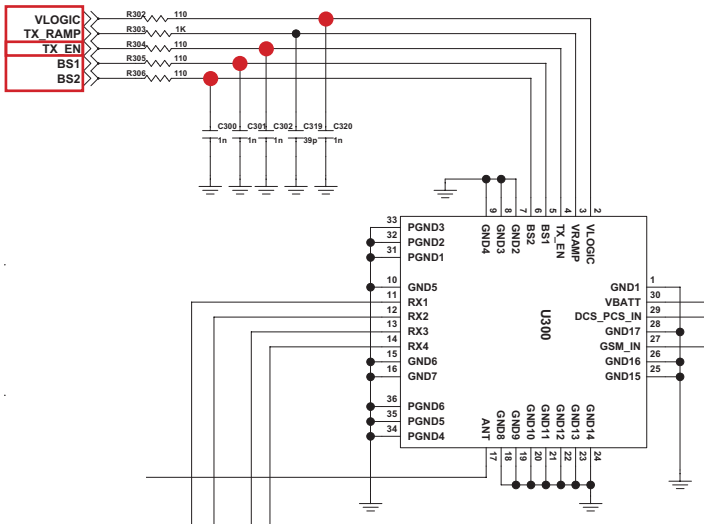


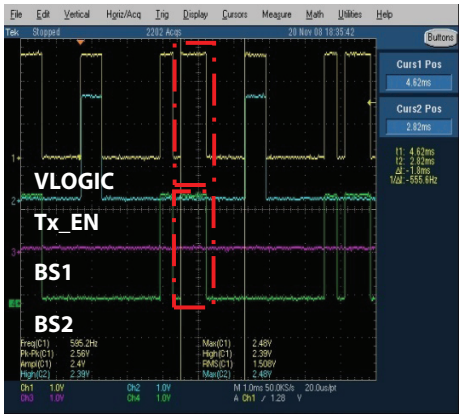
Figure 4.2.4

CIRCUIT



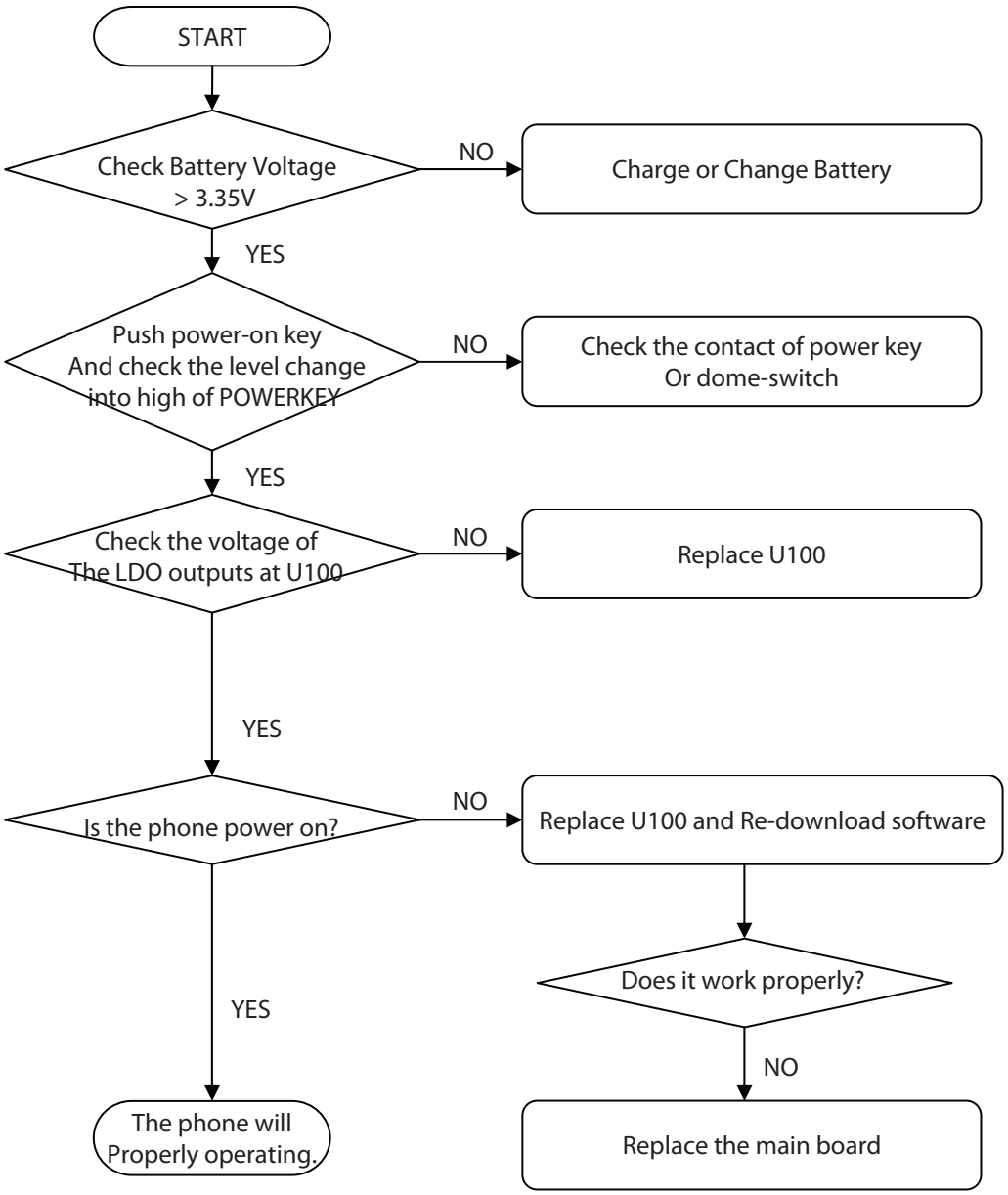
CONTROL LOGIC

EGSM Rx



4.4 Power On Trouble

CHECKING FLOW



TEST POINT

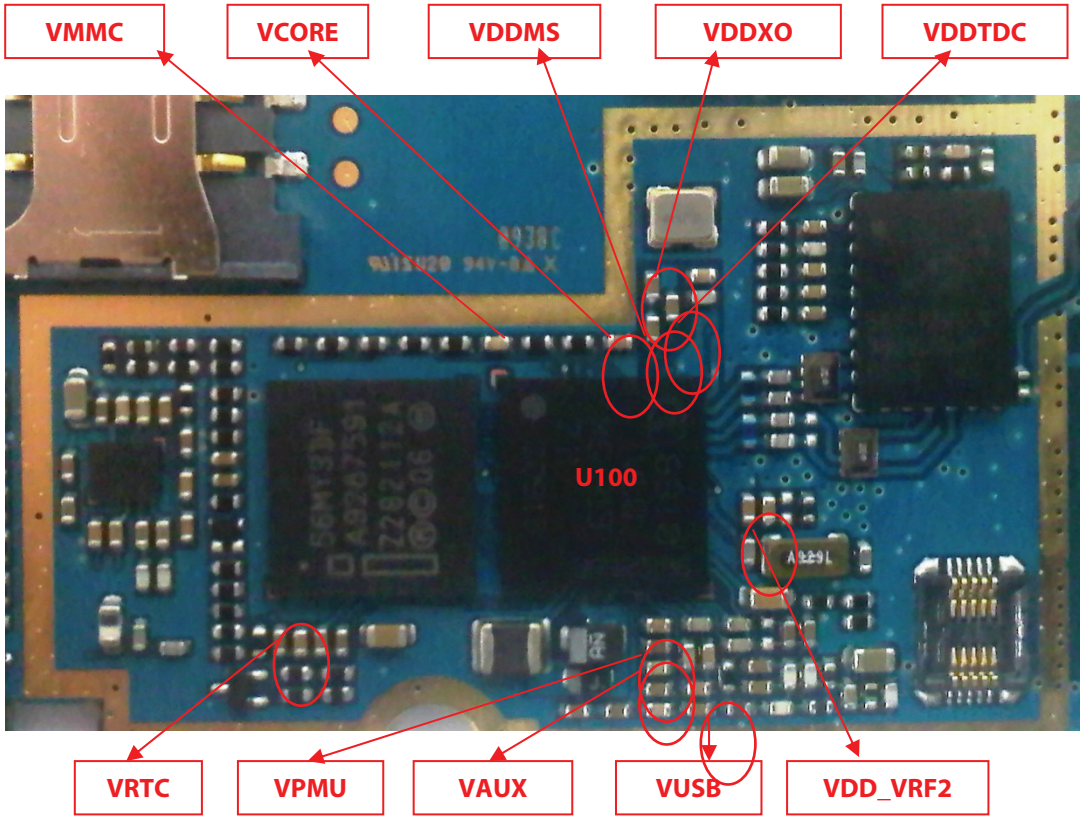


Figure 4.1

CIRCUIT

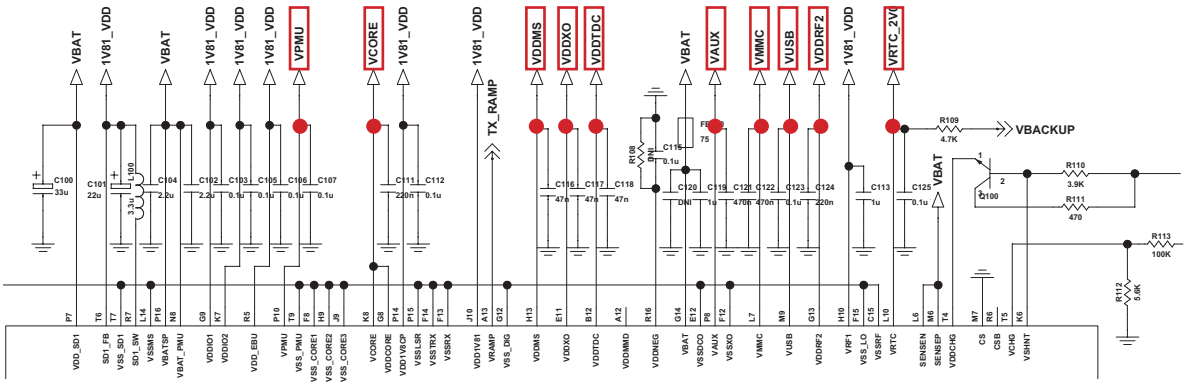
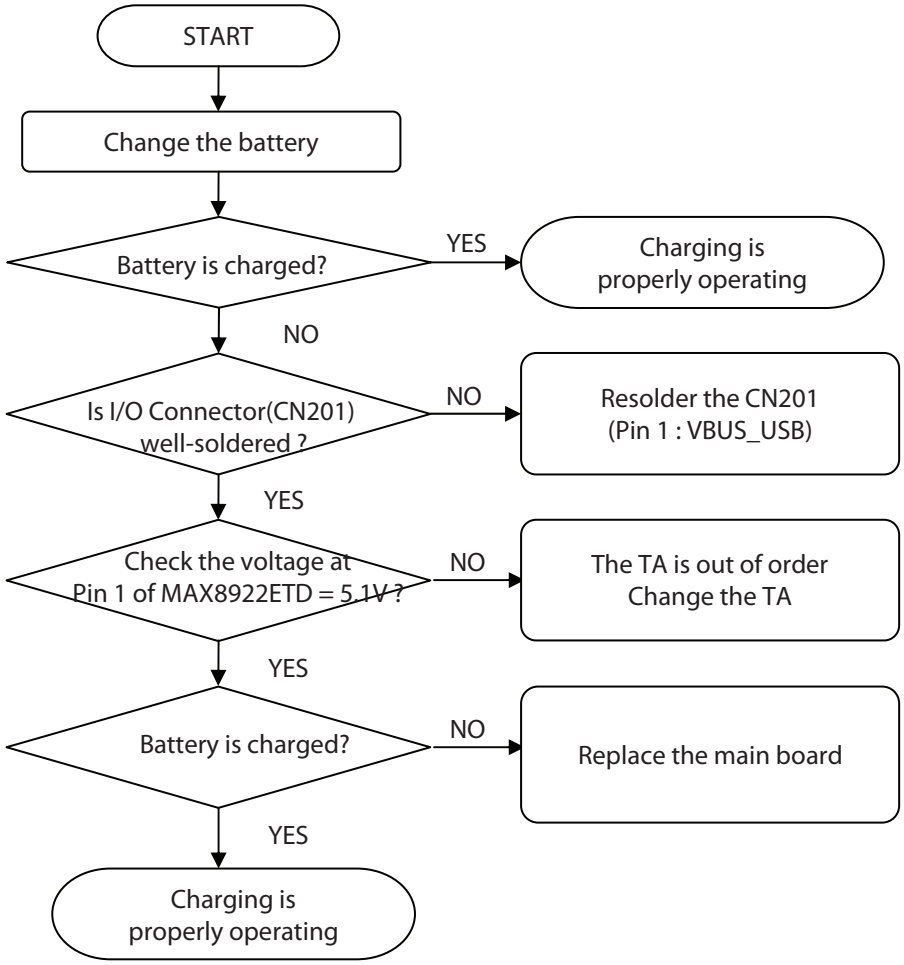


Figure 4.2 power block of GD350

4.5 Charging Trouble

CHECKING FLOW



TEST POINT

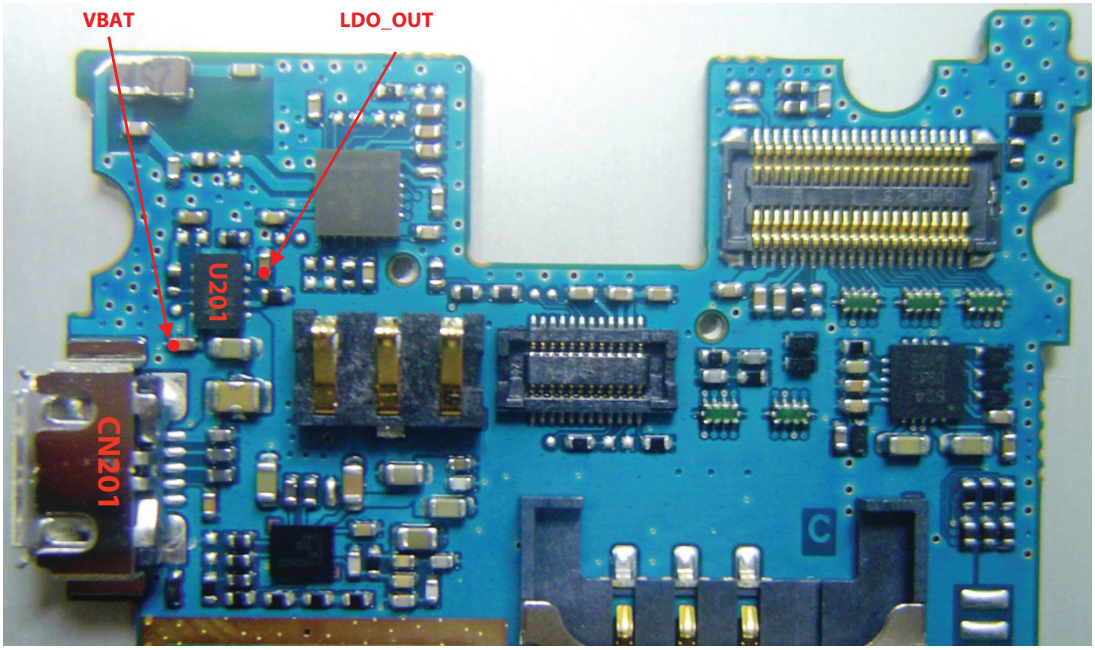
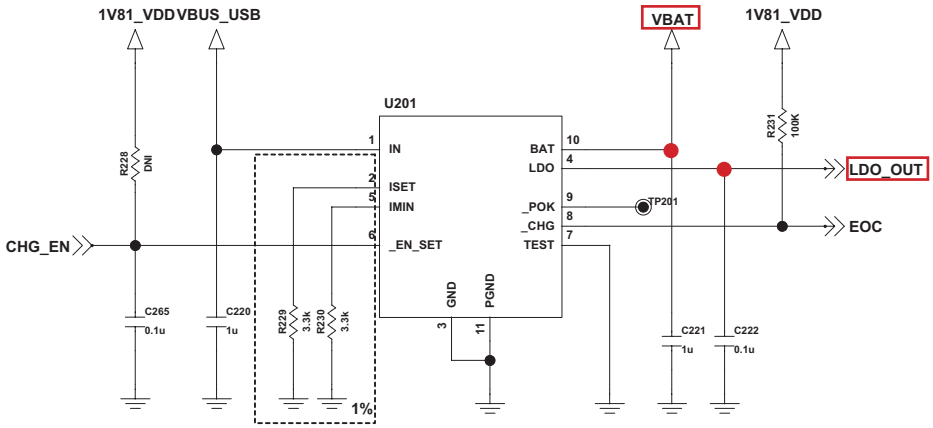


Figure 4.5

CIRCUIT

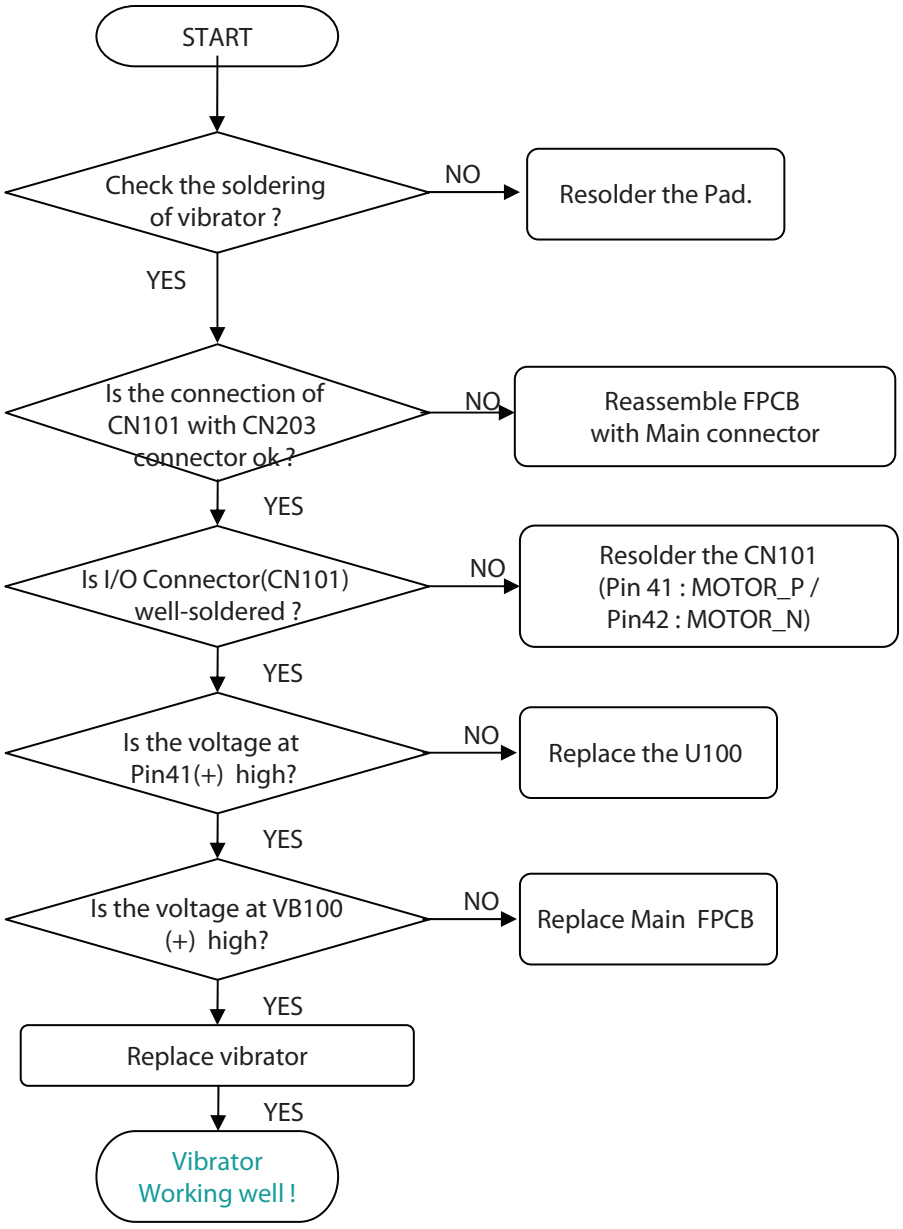
CHARGER IC



4.6 Vibrator Trouble

CHECKING FLOW

SETTING : Enter the engineering mode, and set vibrator on at vibration of BB test menu



TEST POINT

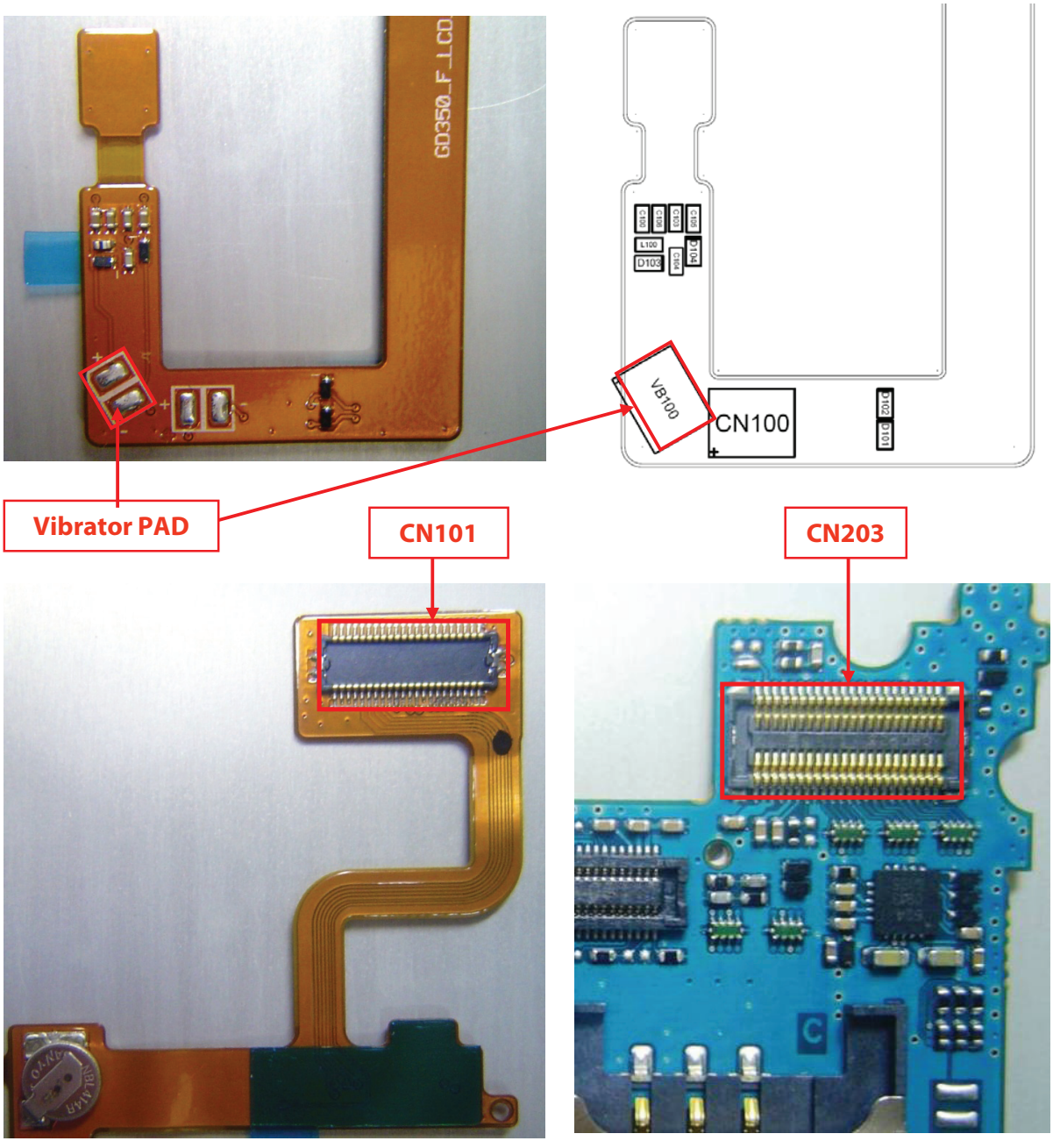
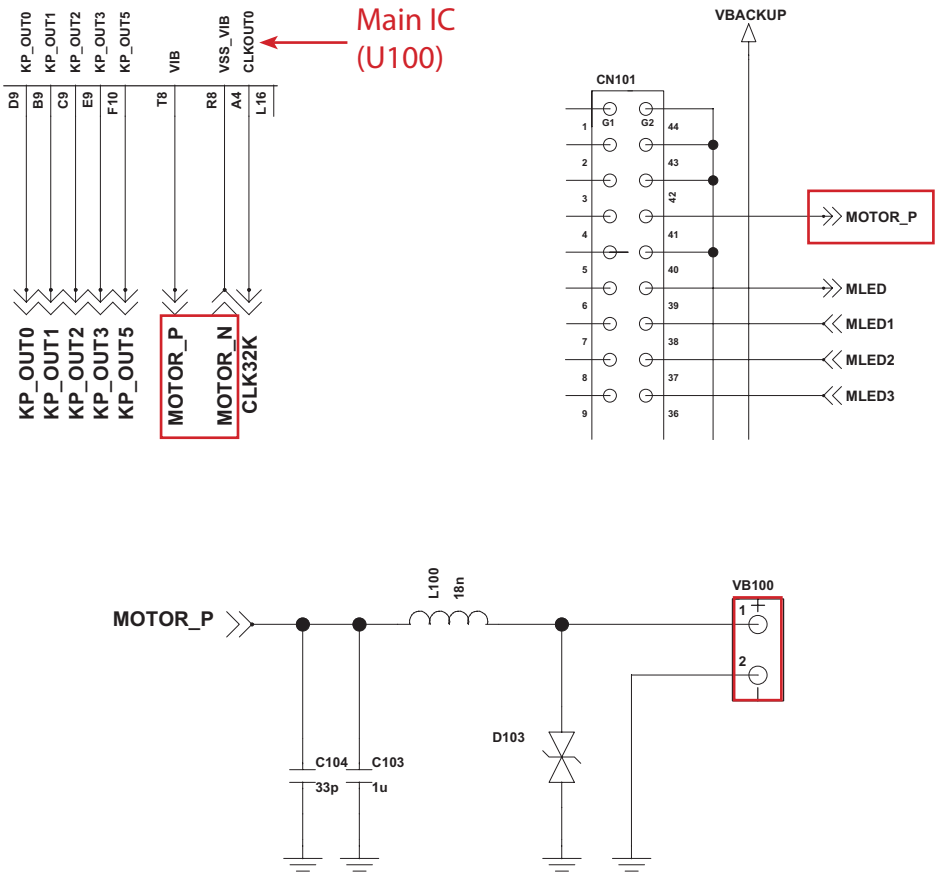
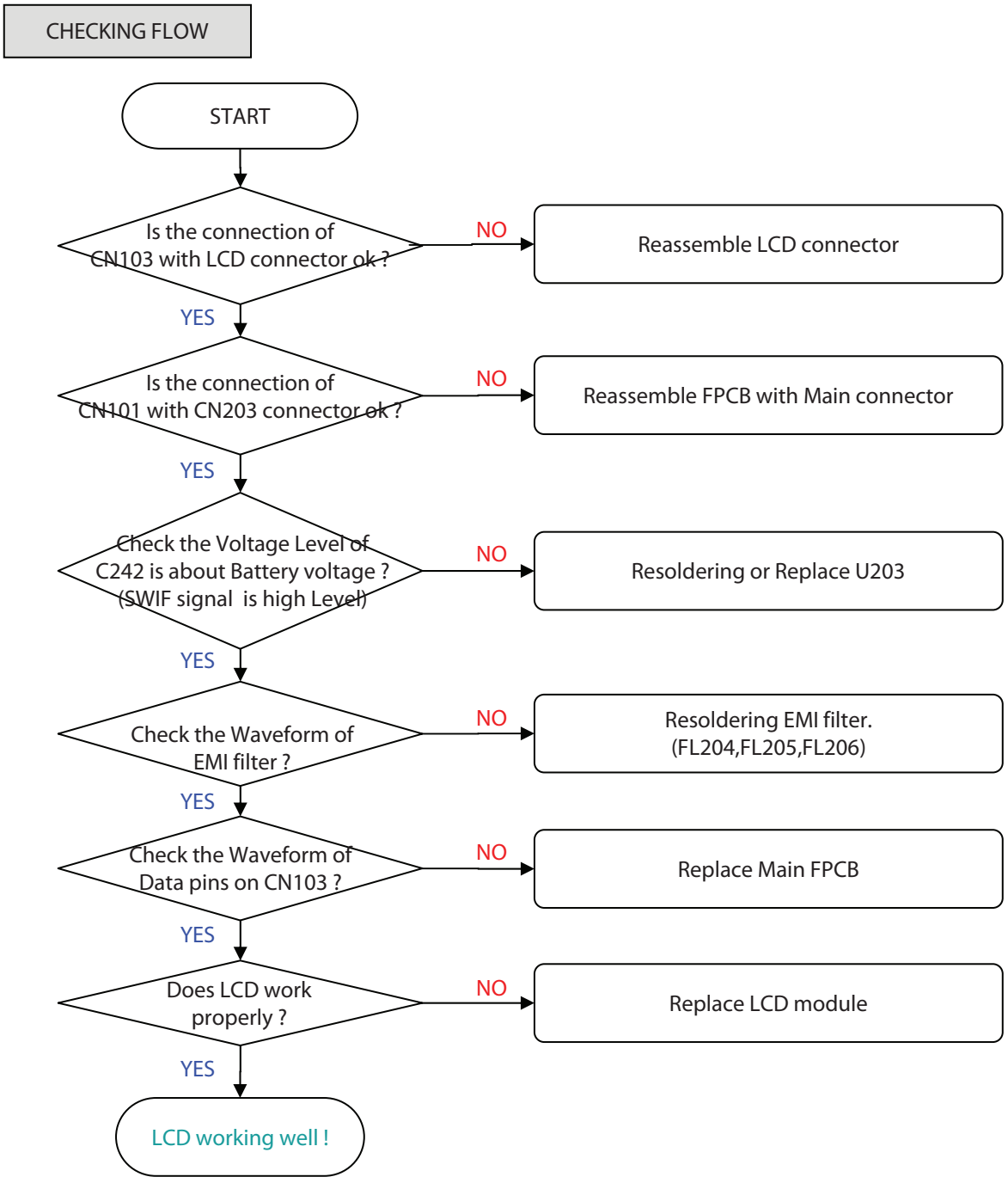


Figure 4.6

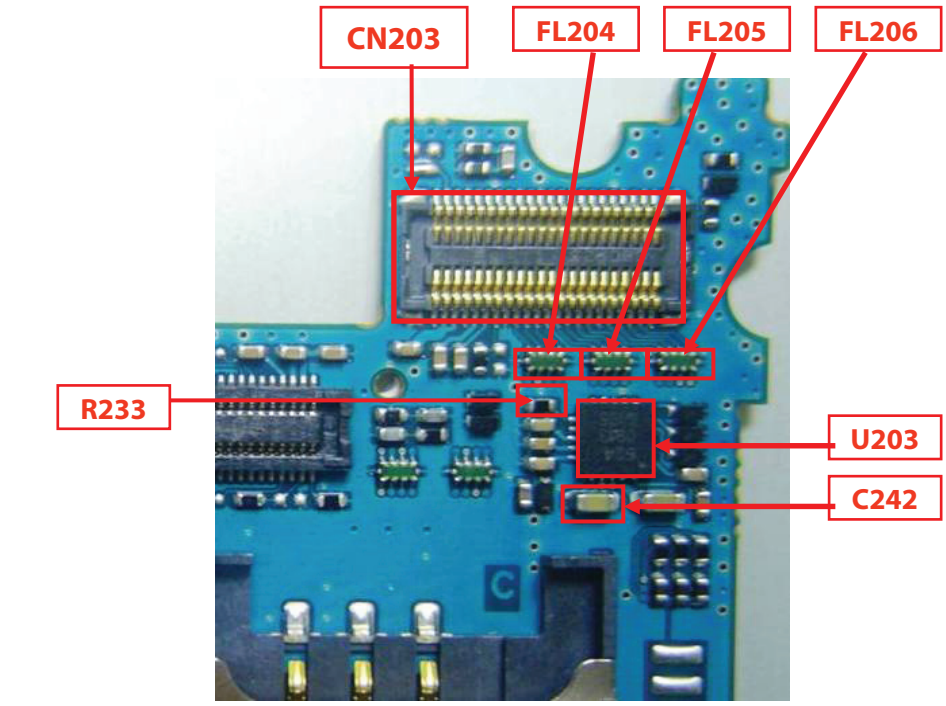
CIRCUIT

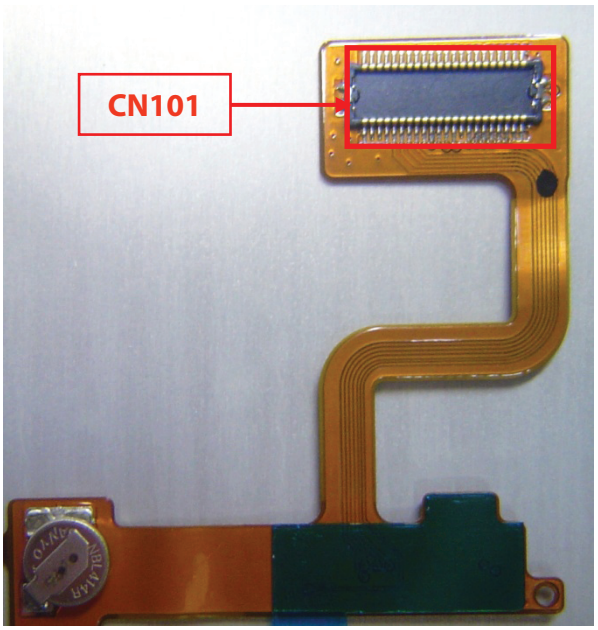


4.7 LCD Trouble



TEST POINT





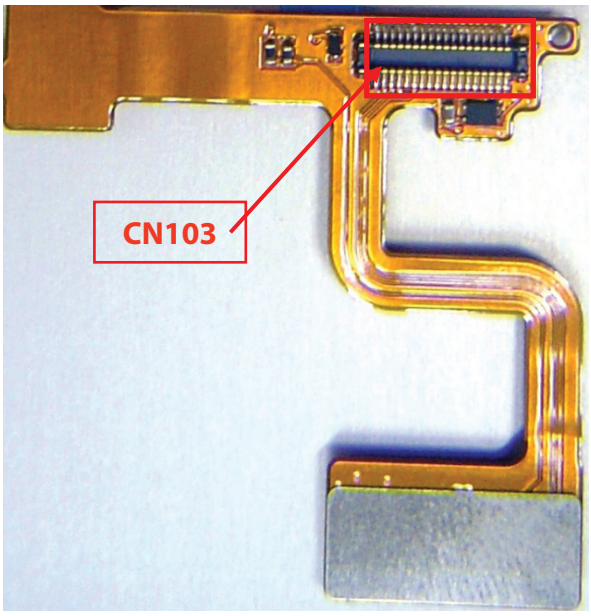
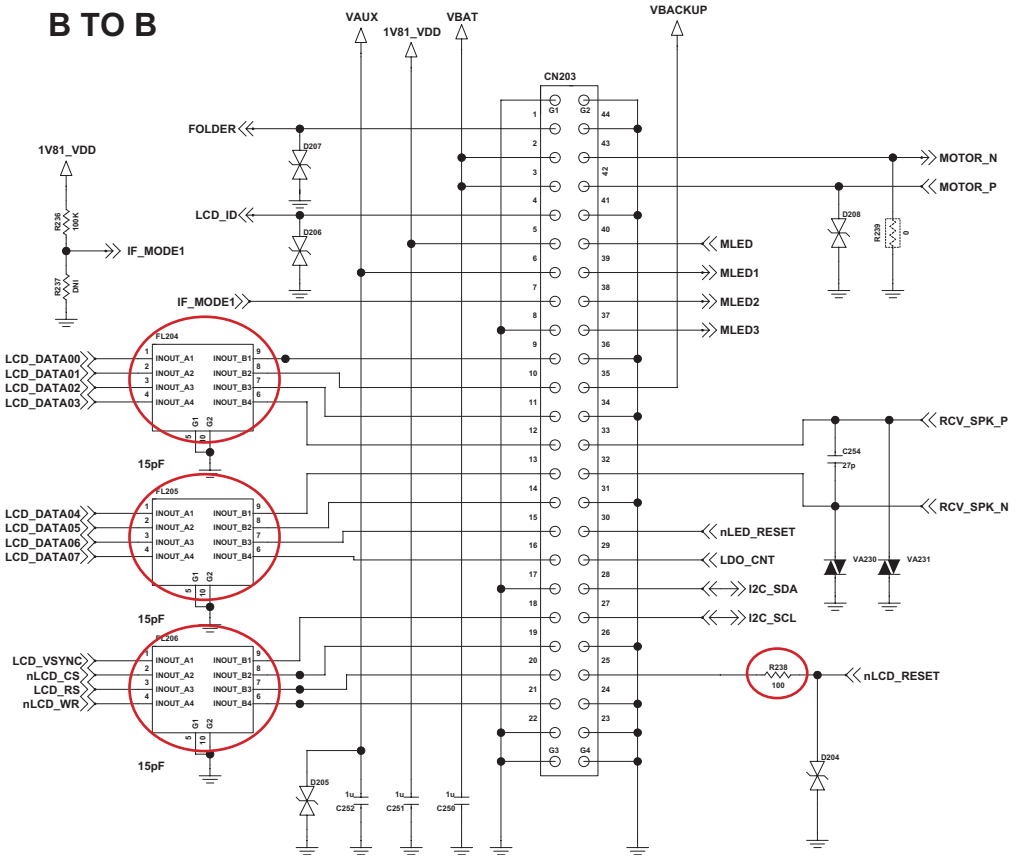
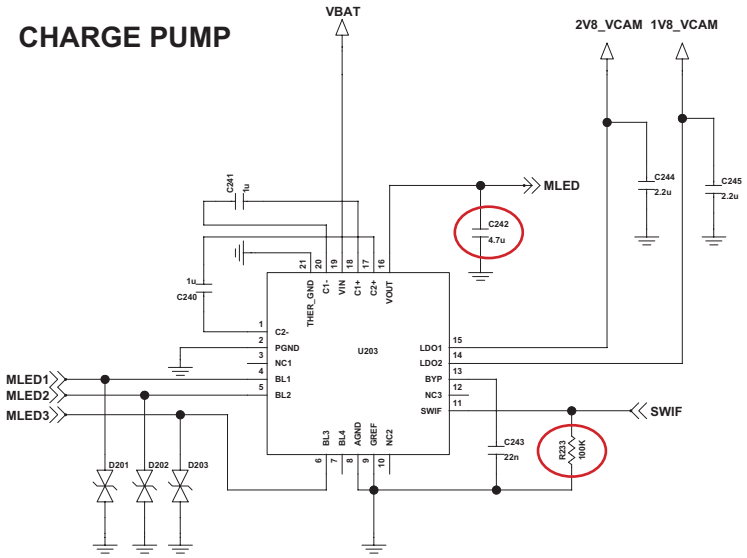


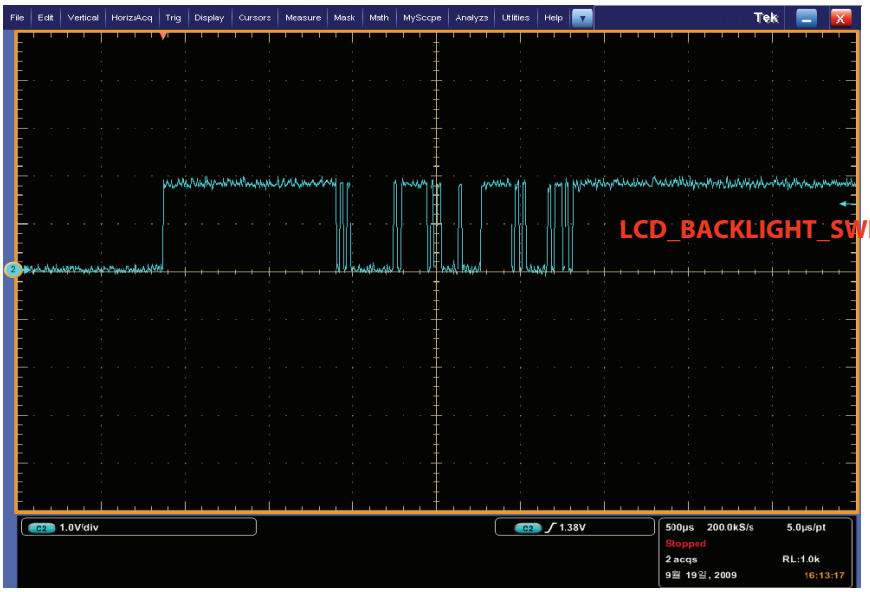
Figure 4.7

CIRCUIT

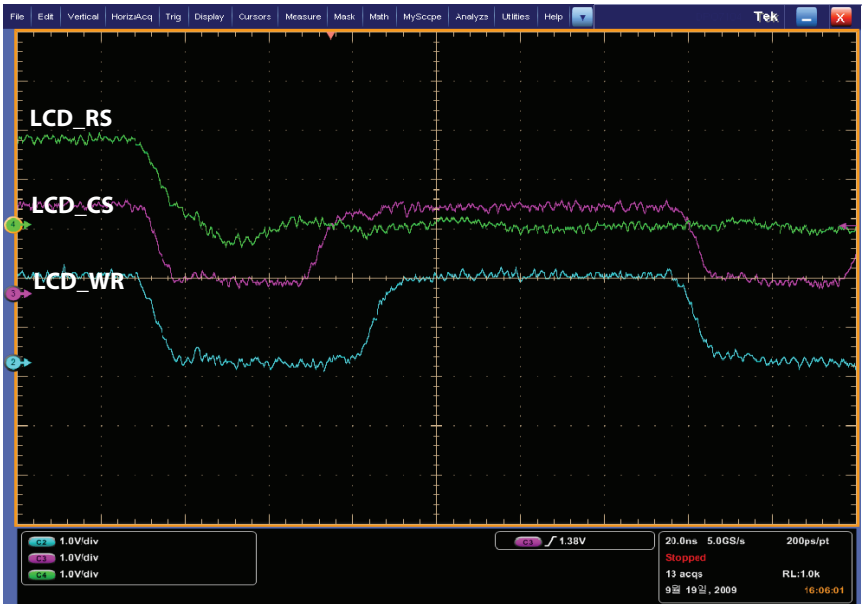




Waveform

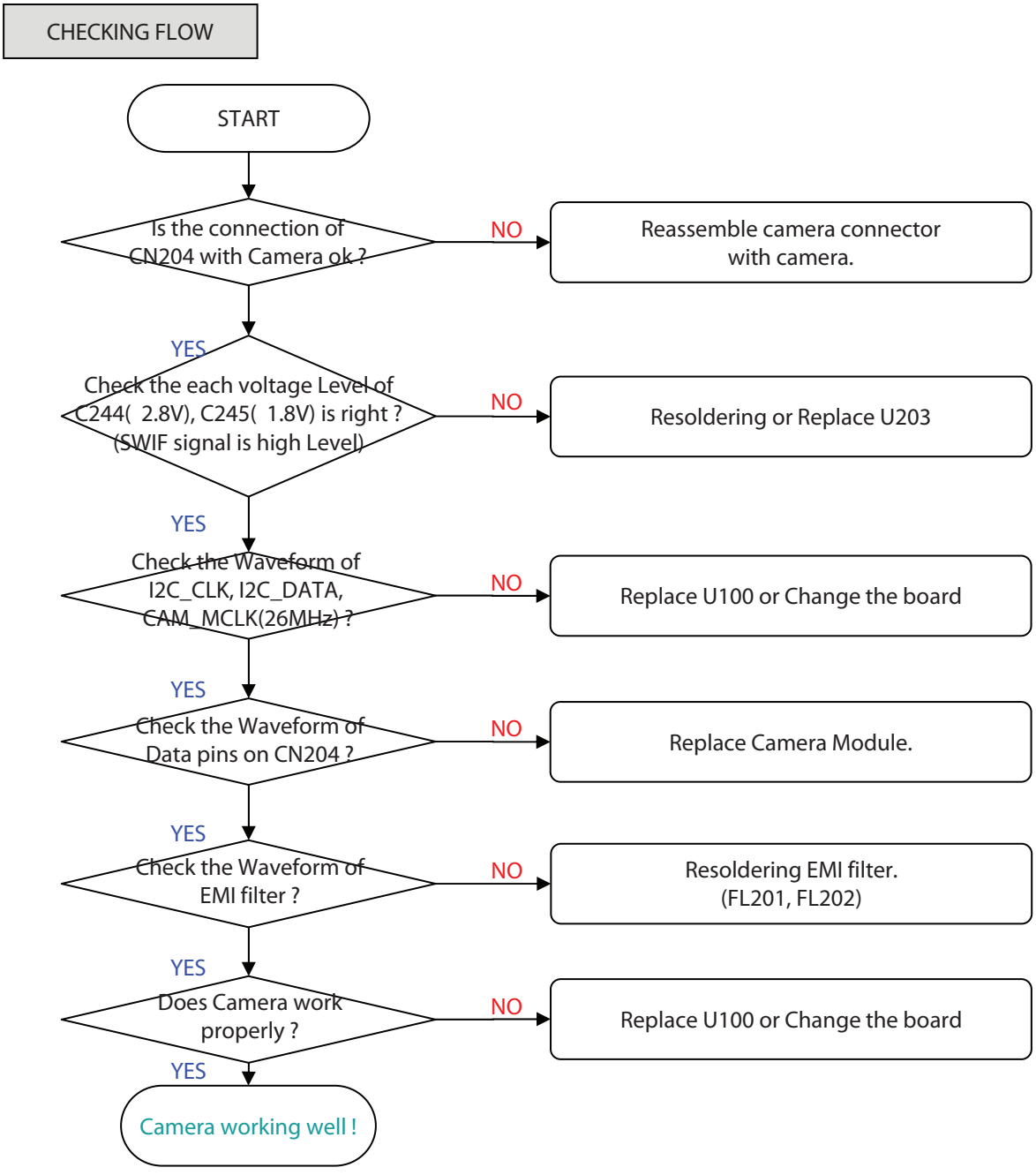


Graph 4.7.1. LCD Backlight Control Signal Waveform



Graph 4.7.2. LCD Data Waveform

4.8 Camera Trouble



TEST POINT

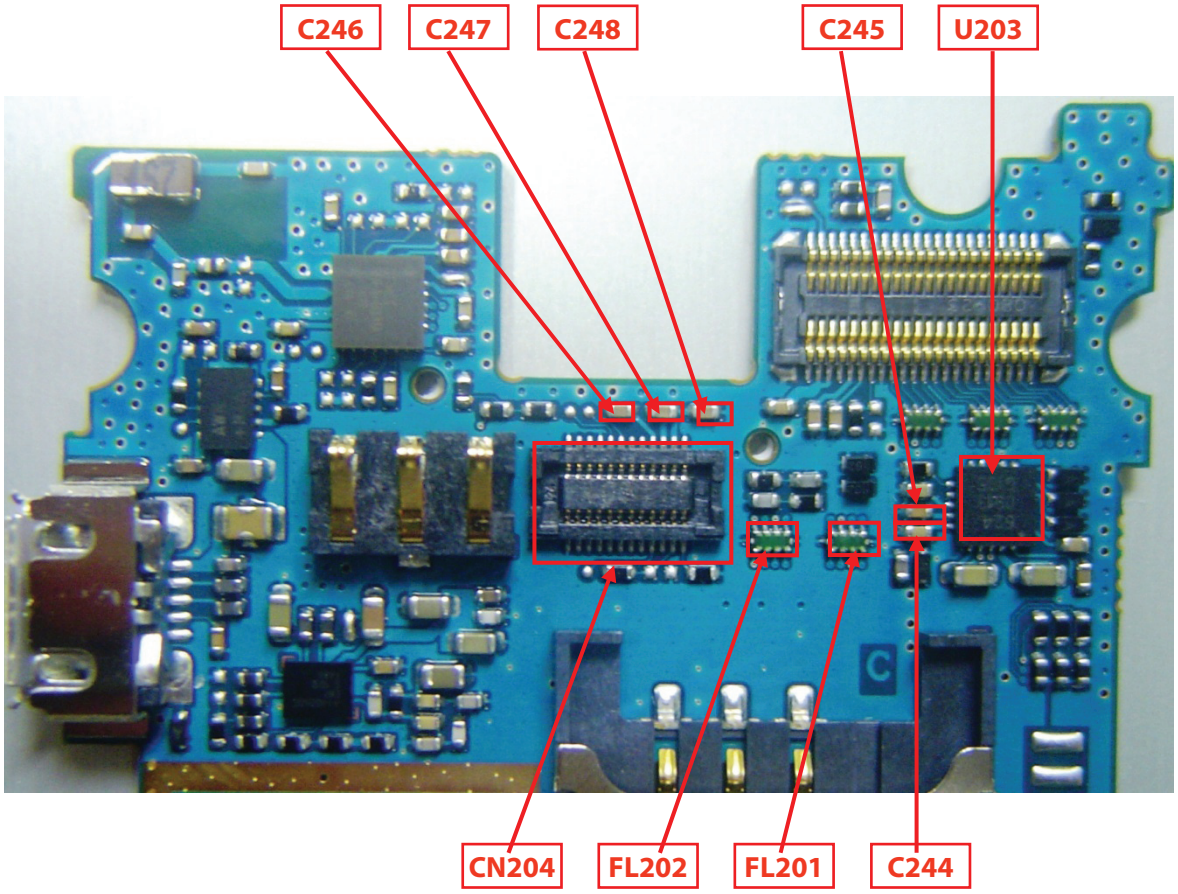
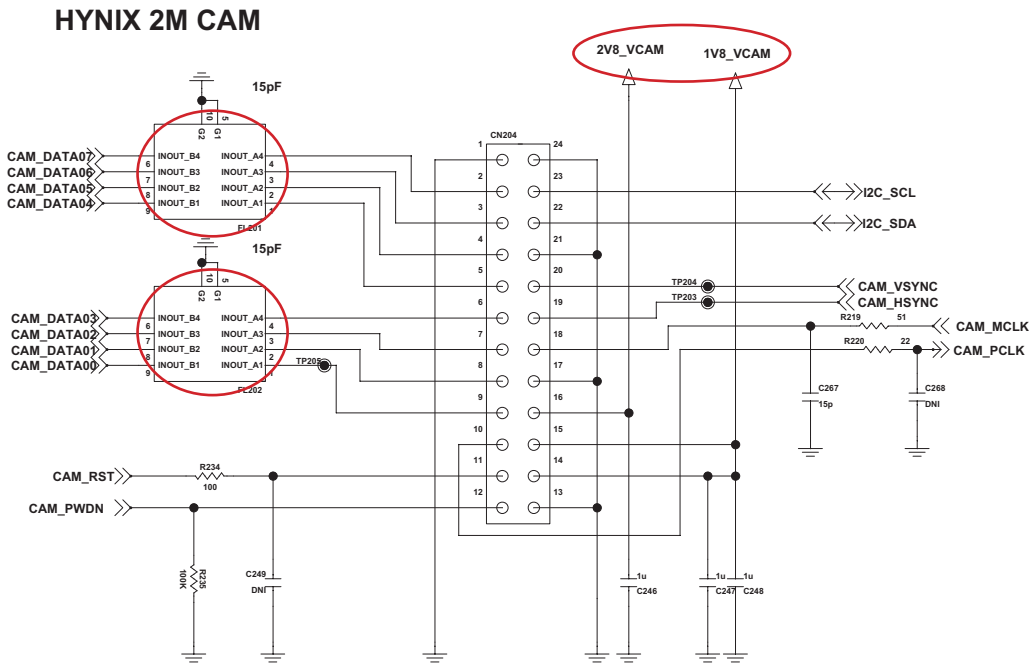
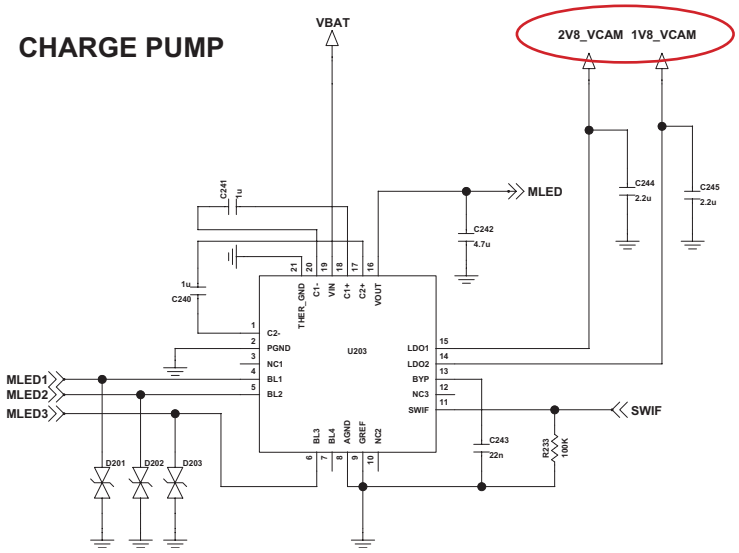


Figure 4.8

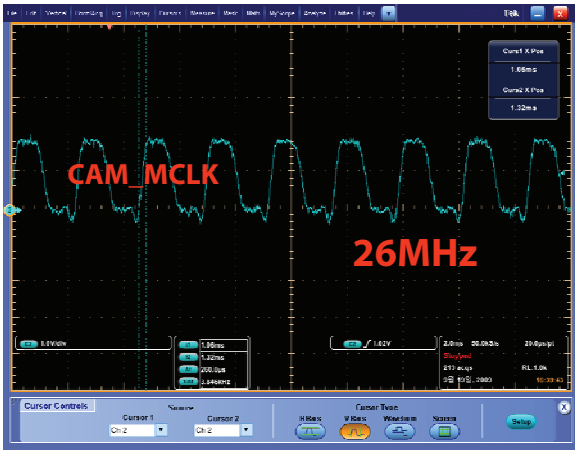
CIRCUIT



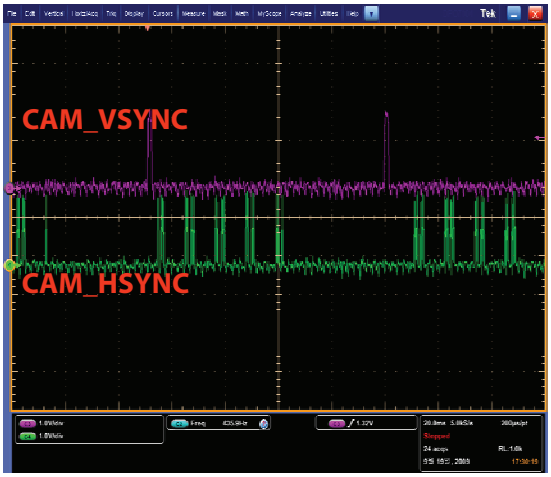


Waveform

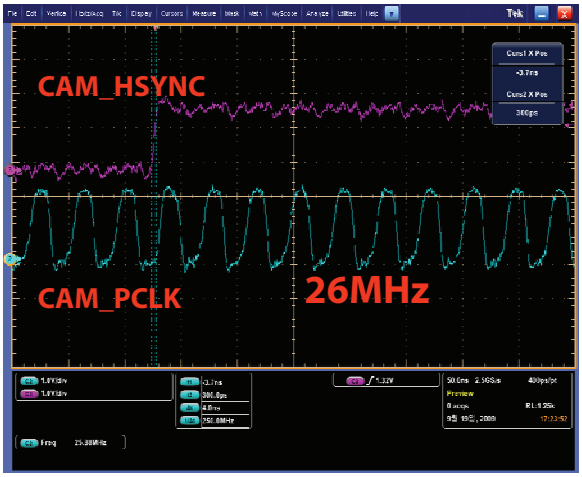
Graph 4.8.1. I2C Data Waveform



Graph 4.8.2. MCLK Waveform



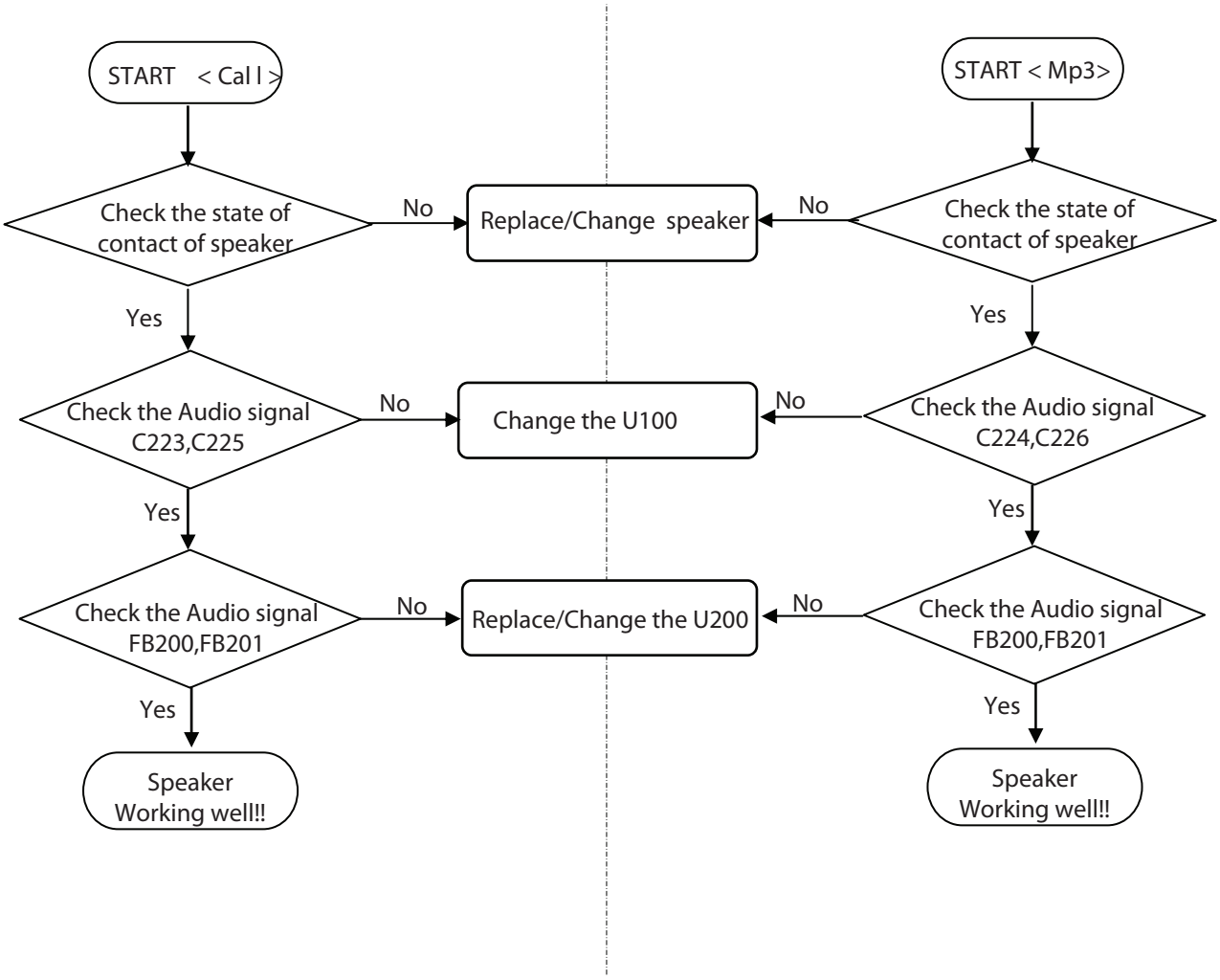
Graph 4.8.3.CAM_VSYNC vs. CAM_HSYNC Waveform



Graph 4.8.4.CAM_HSYNC vs. CAM_PCLK Waveform

4.9 Speaker Trouble

CHECKING FLOW



TEST POINT

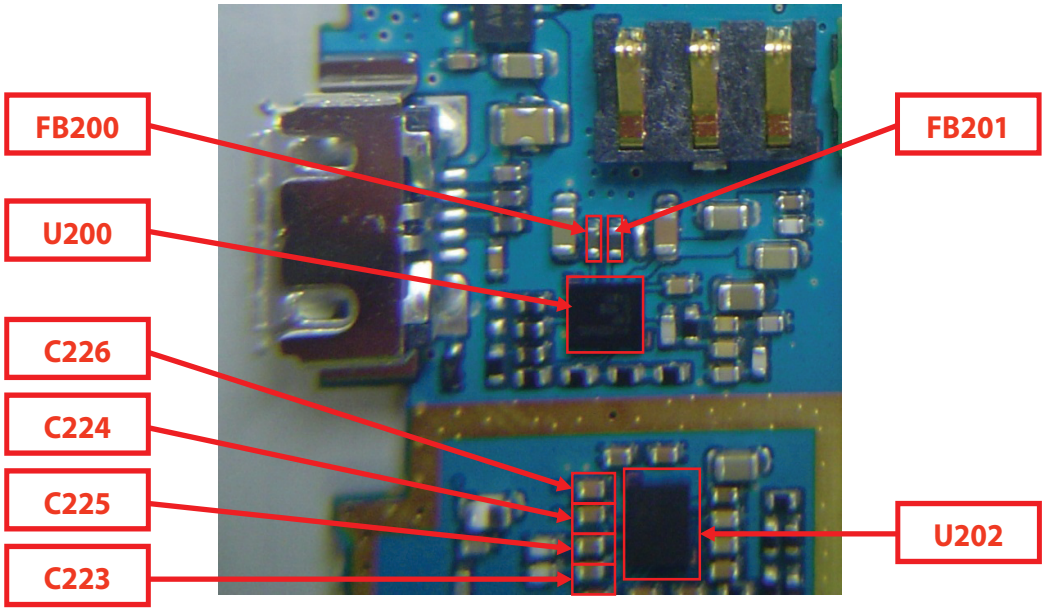
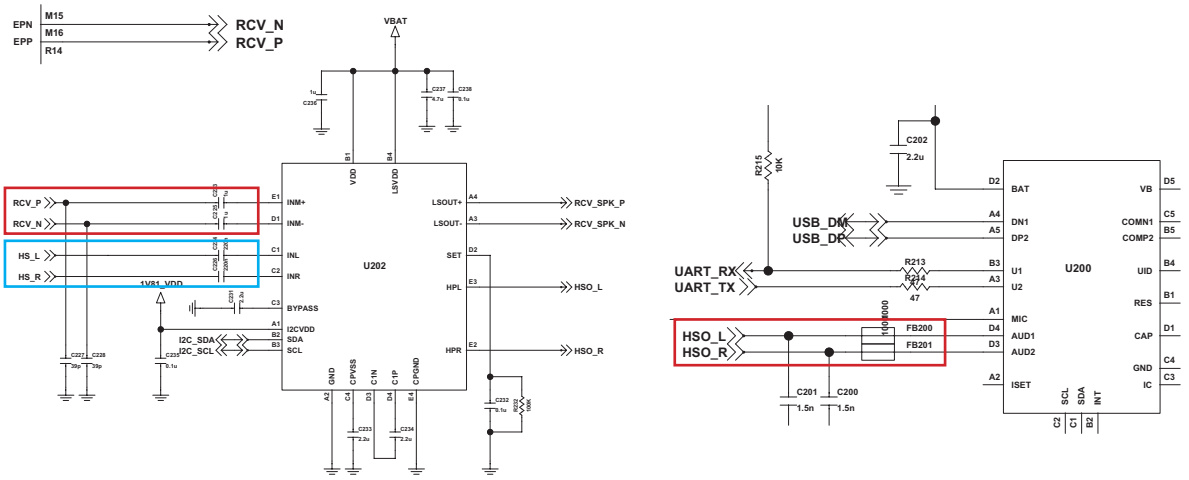
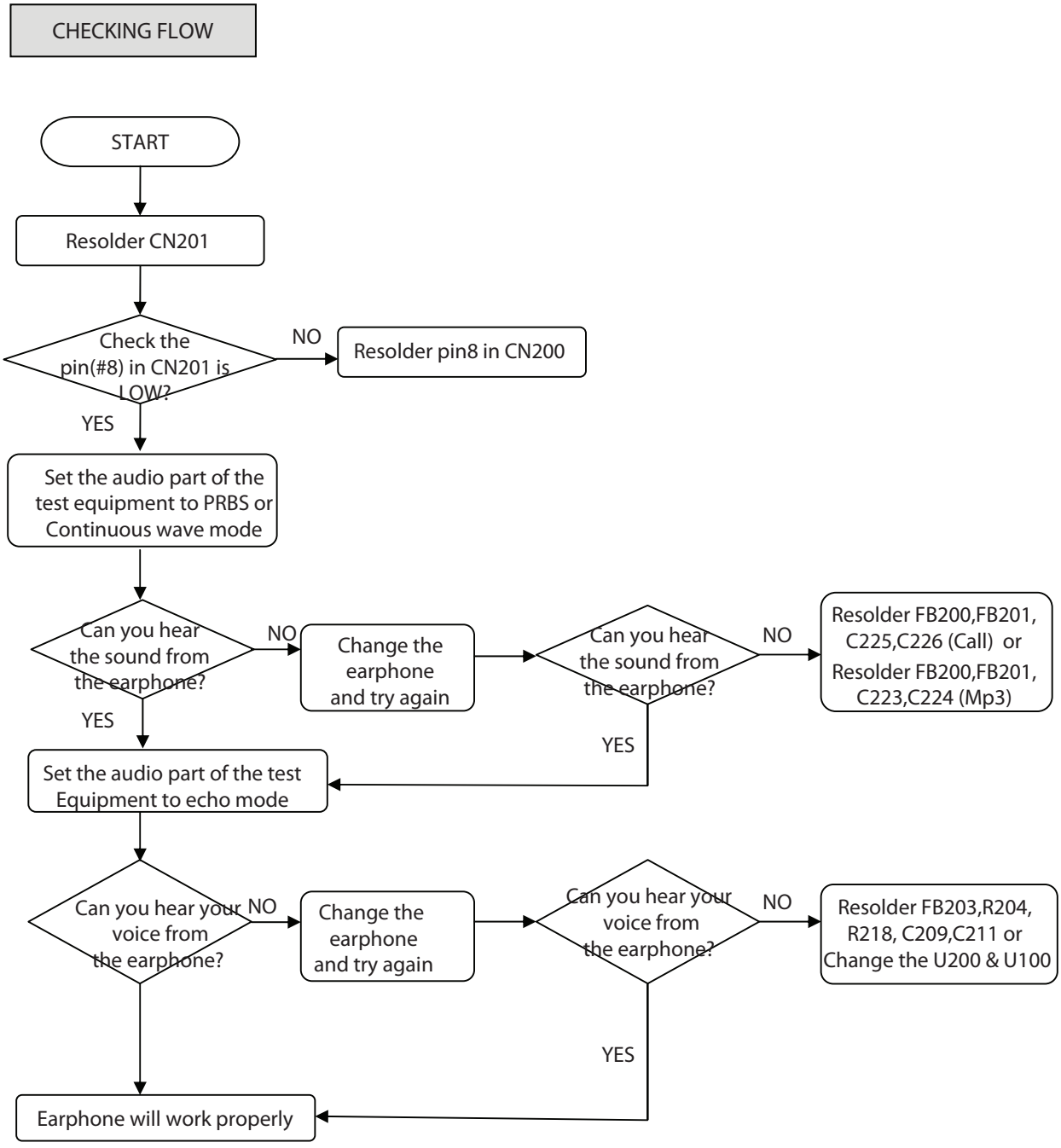


Figure 4.11.1

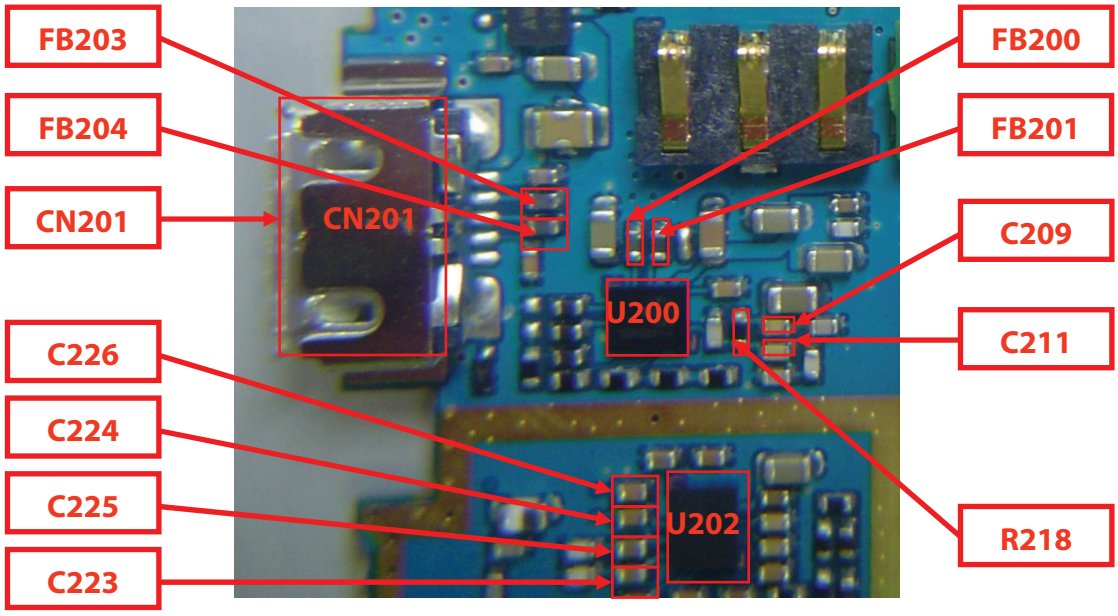
CIRCUIT



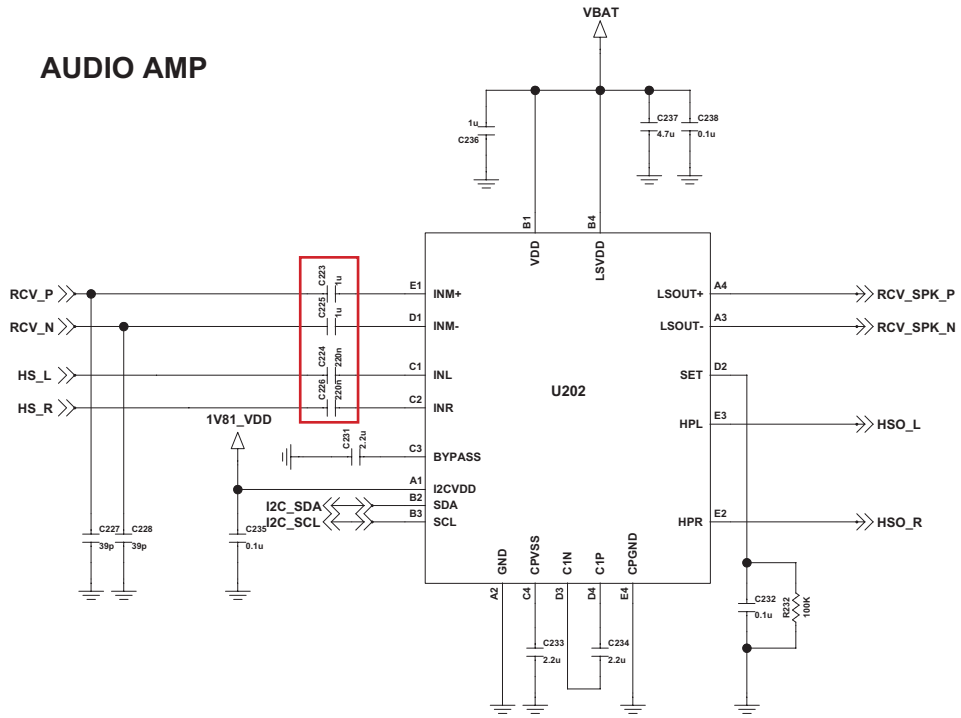
4.10 Earphone Trouble

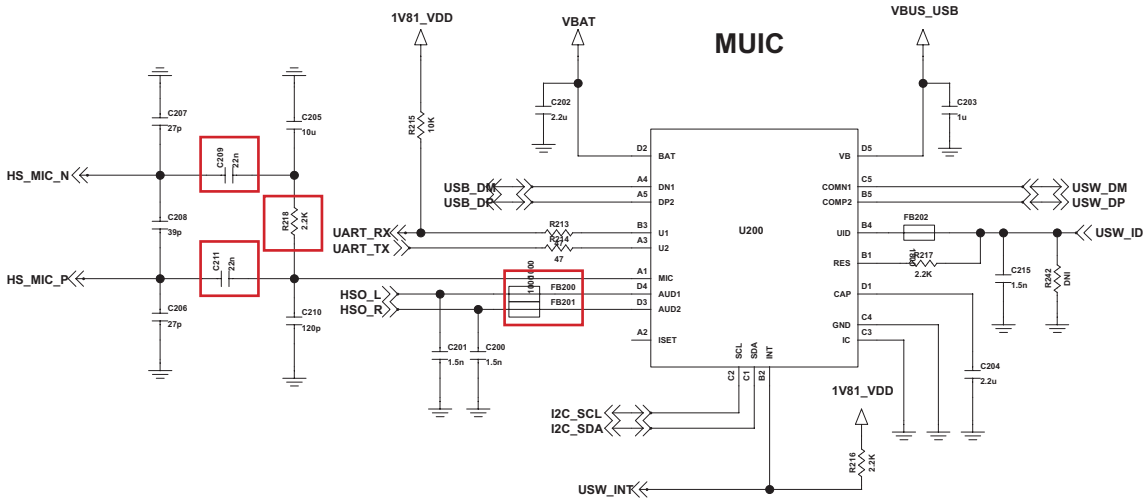


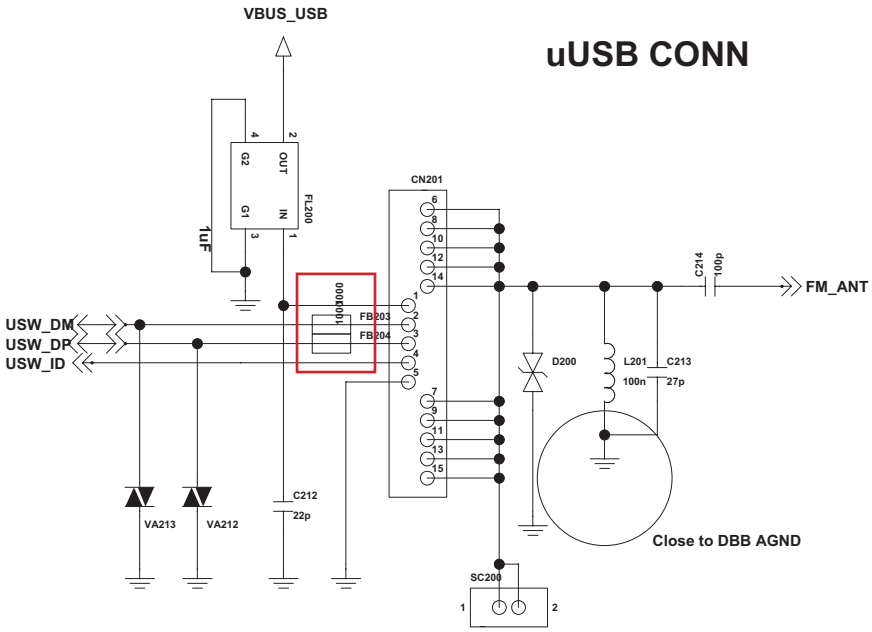
TEST POINT



CIRCUIT





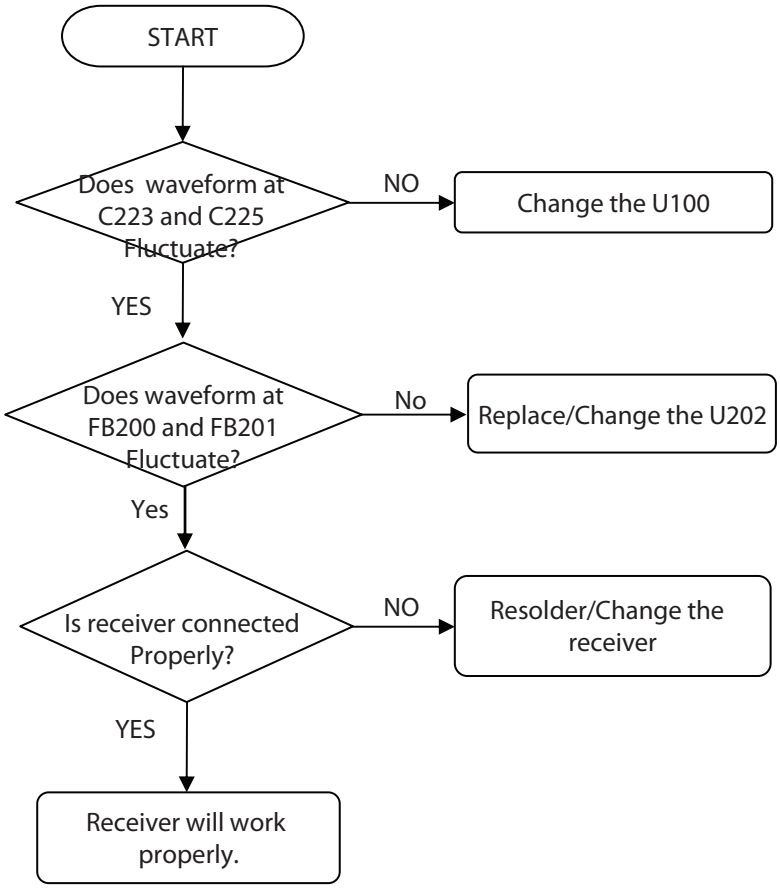


4.11 Receiver Trouble

CHECKING FLOW

SETTING : After initialize Agilent 8960, Test EGSM900, DCS mode (or GSM850, PCS mode)

Set the property of audio as PRBS or continuous wave. Set the receiving volume of mobile as Max.



TEST POINT

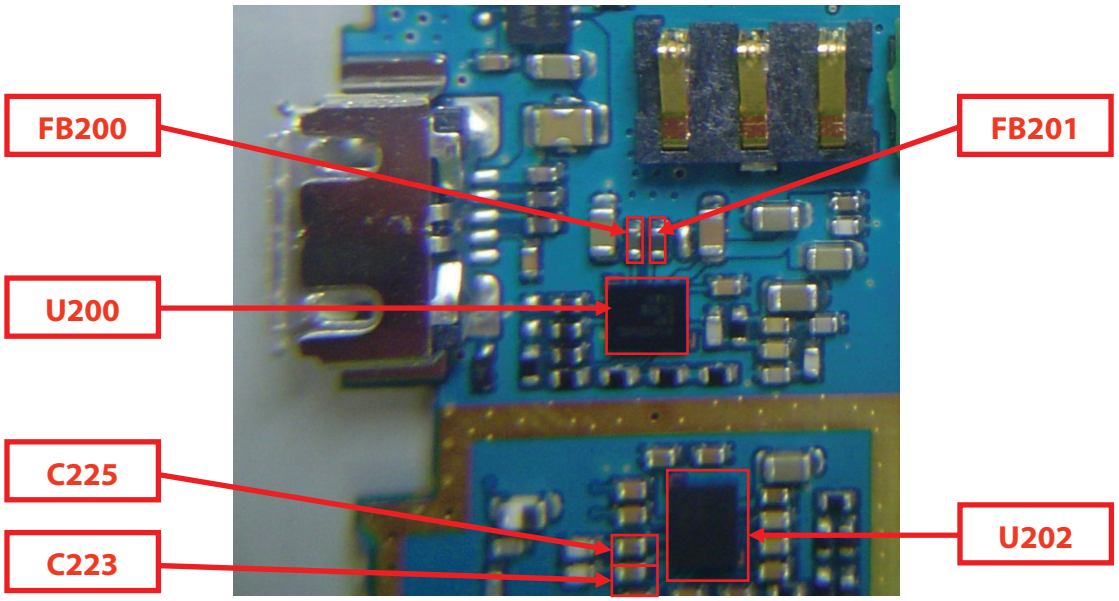
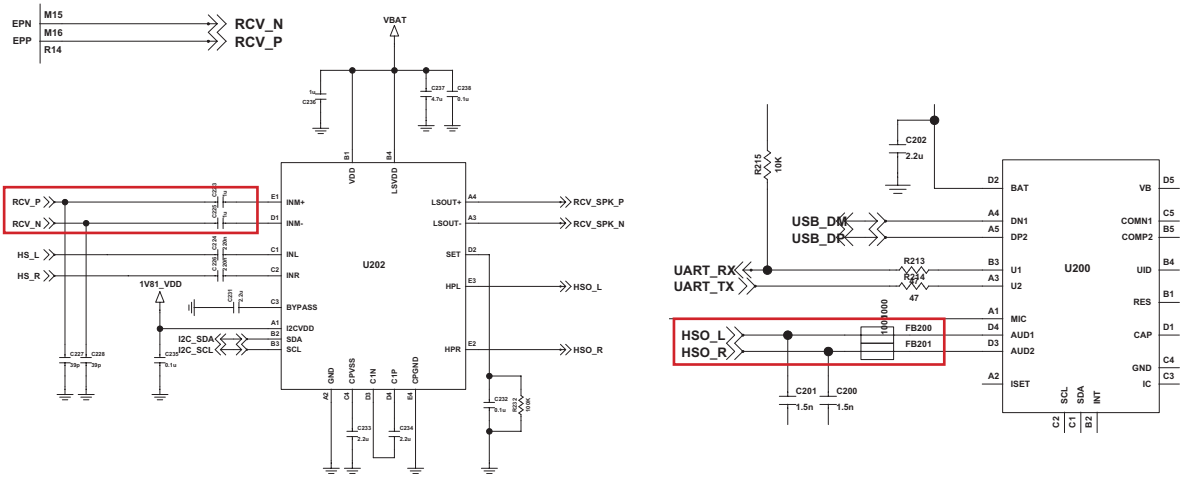


Figure 4.11

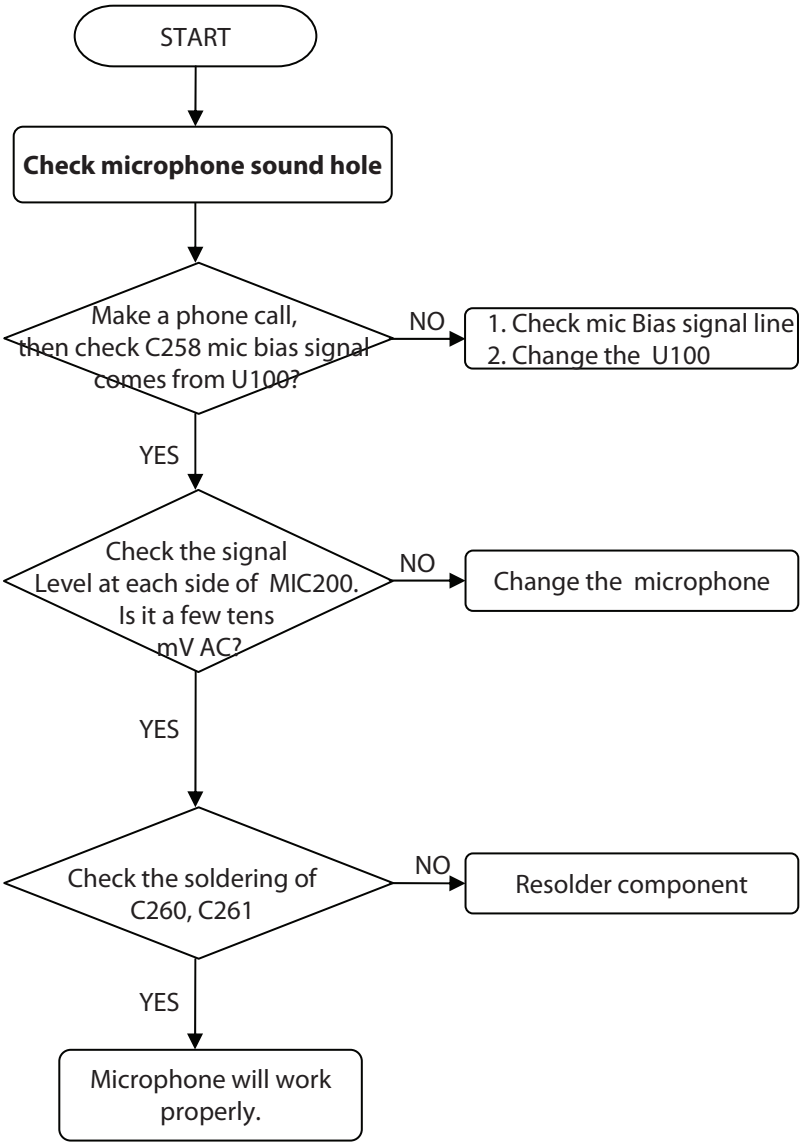
CIRCUIT



4.12 Microphone Trouble

CHECKING FLOW

SETTING : After initialize Agilent 8960, Test EGSM900, DCS mode (or GSM850, PCS mode)



TEST POINT

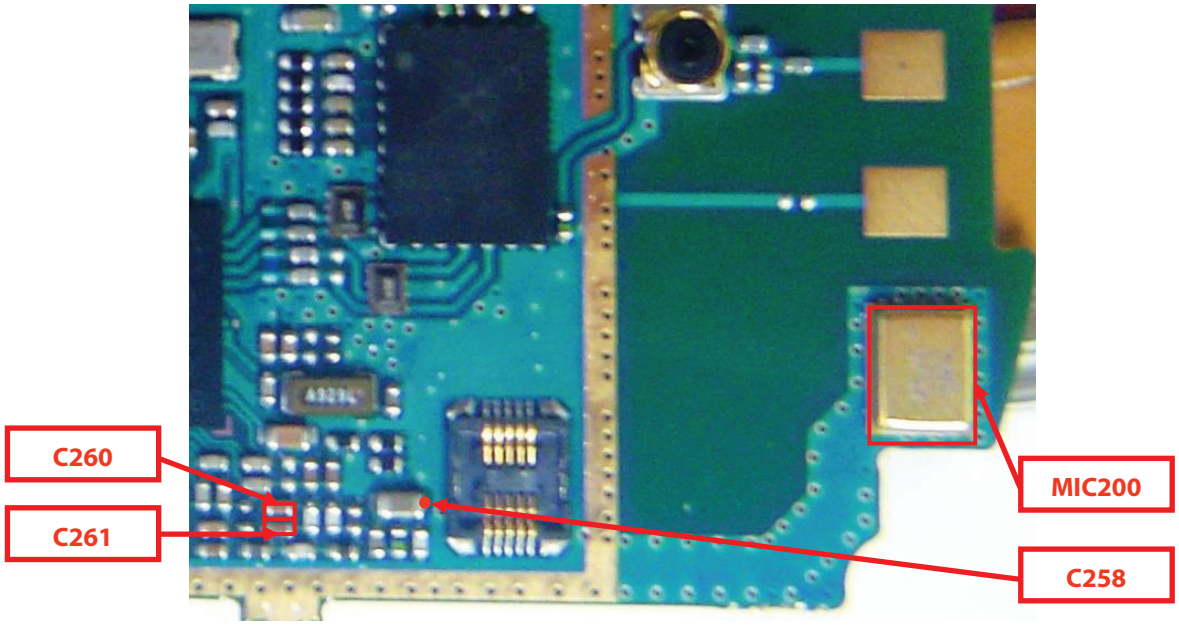
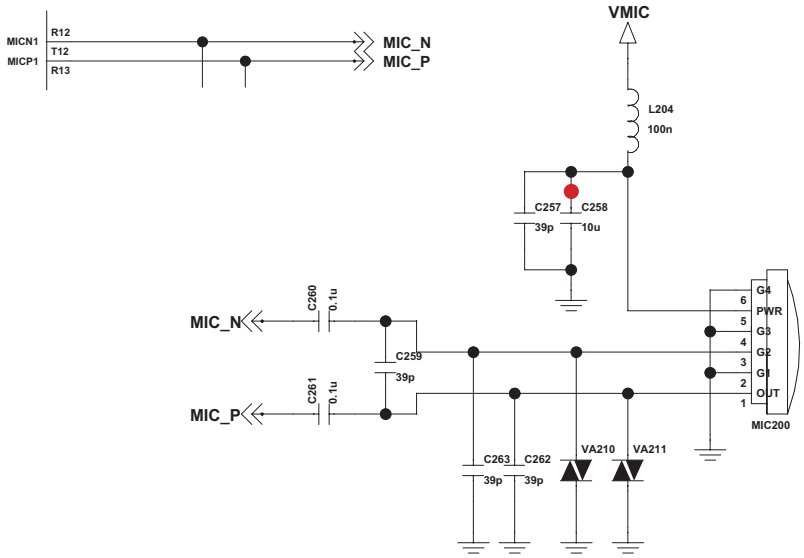
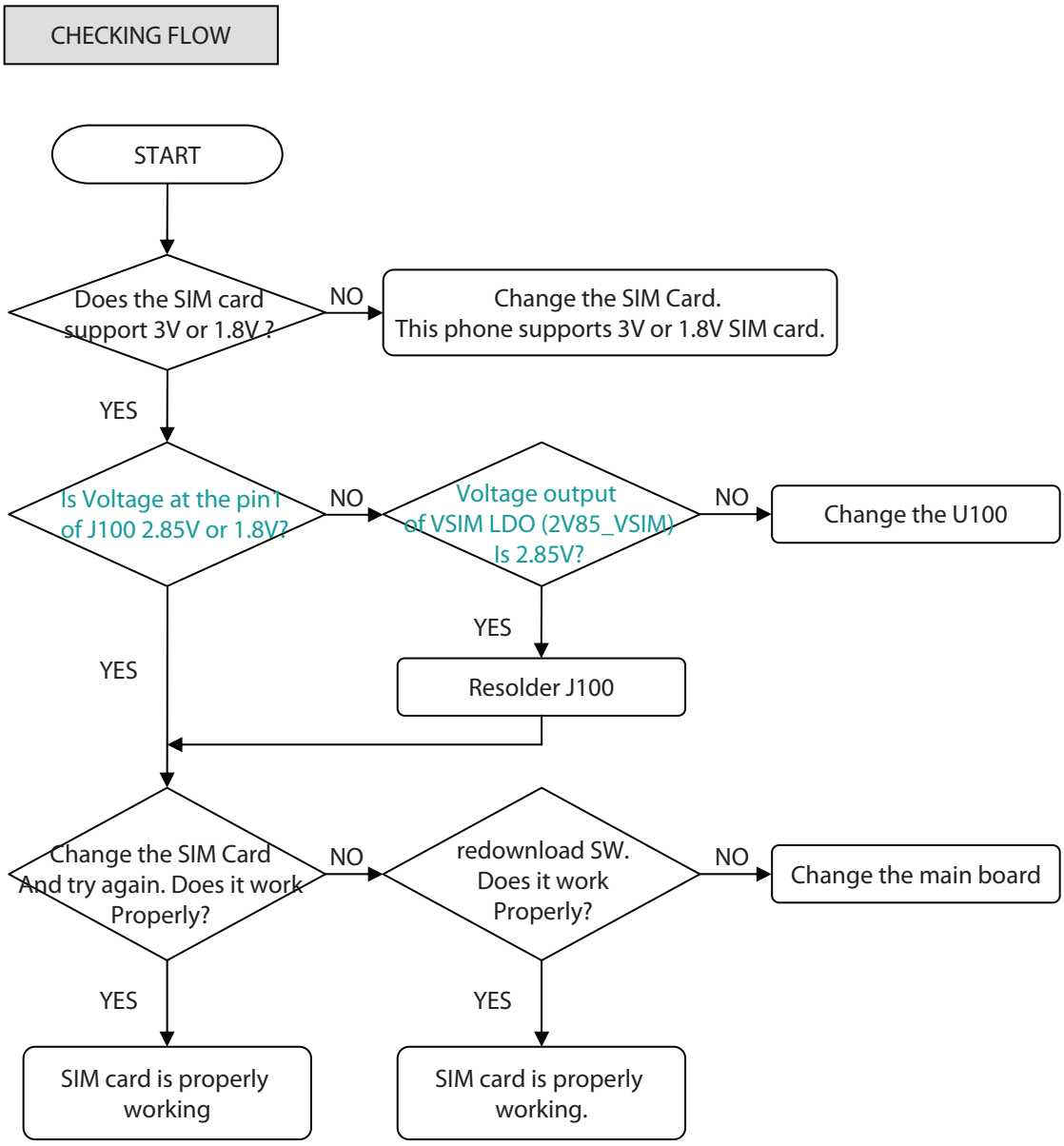


Figure 4.12

CIRCUIT



4.13 SIM Card Interface Trouble



TEST POINT

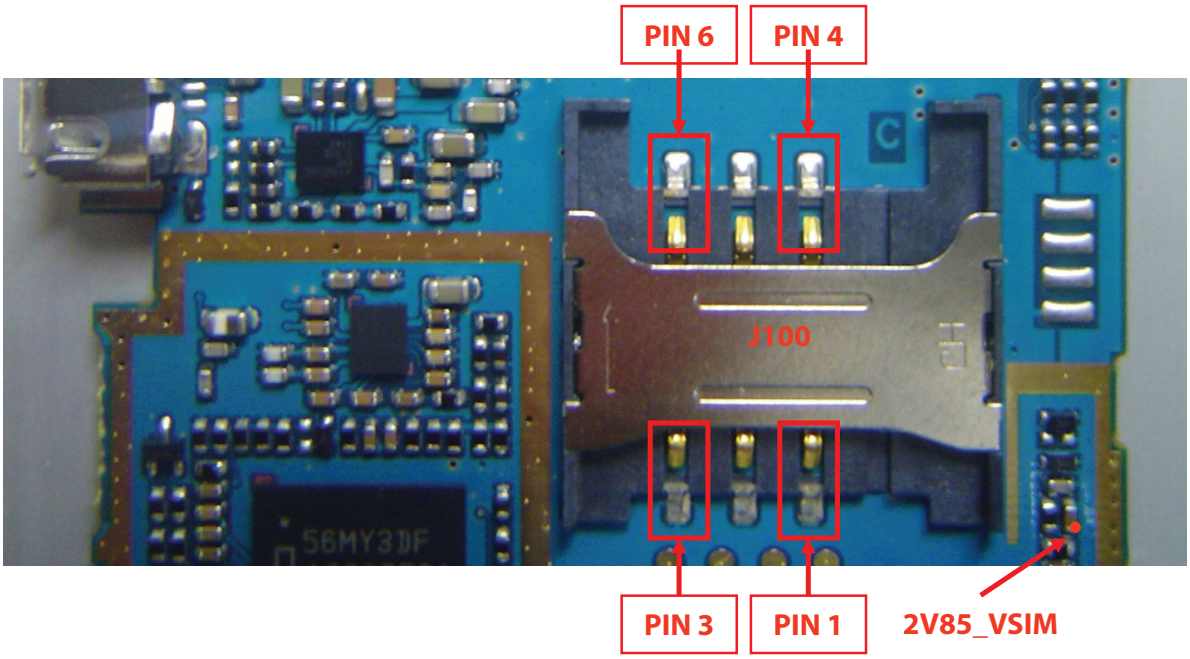
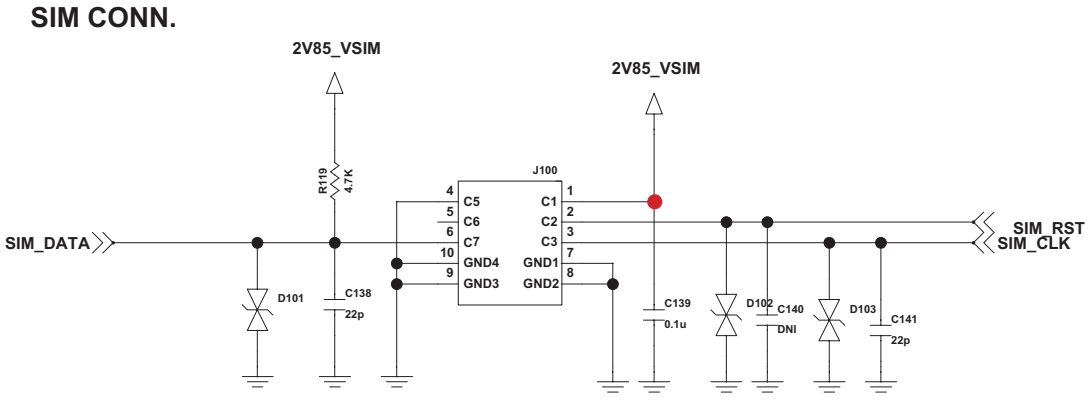


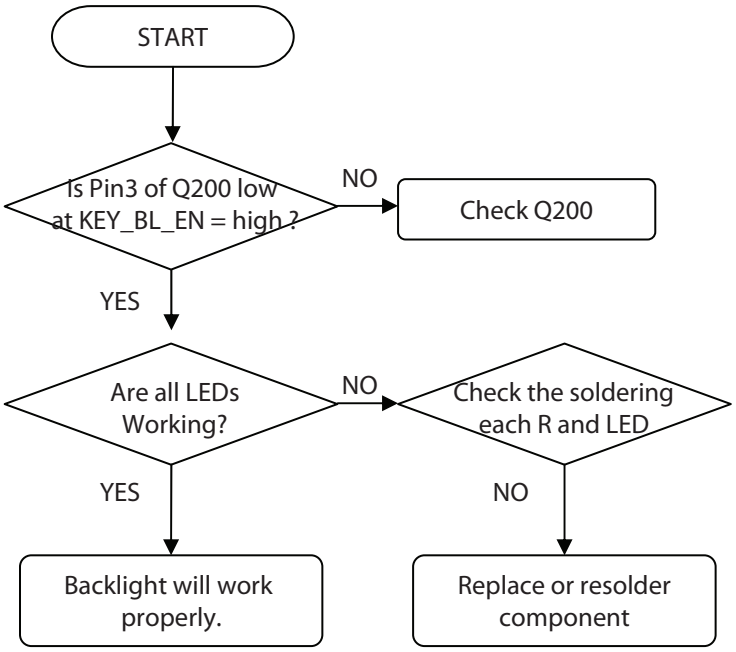
Figure 4.13

CIRCUIT

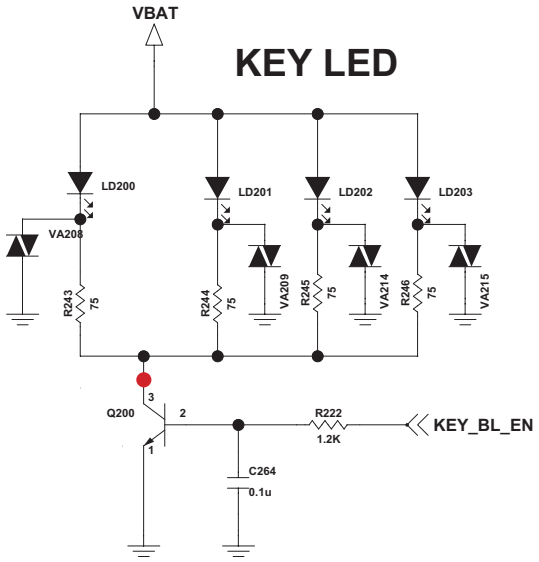


4.14 KEY backlight Trouble

CHECKING FLOW



CIRCUIT



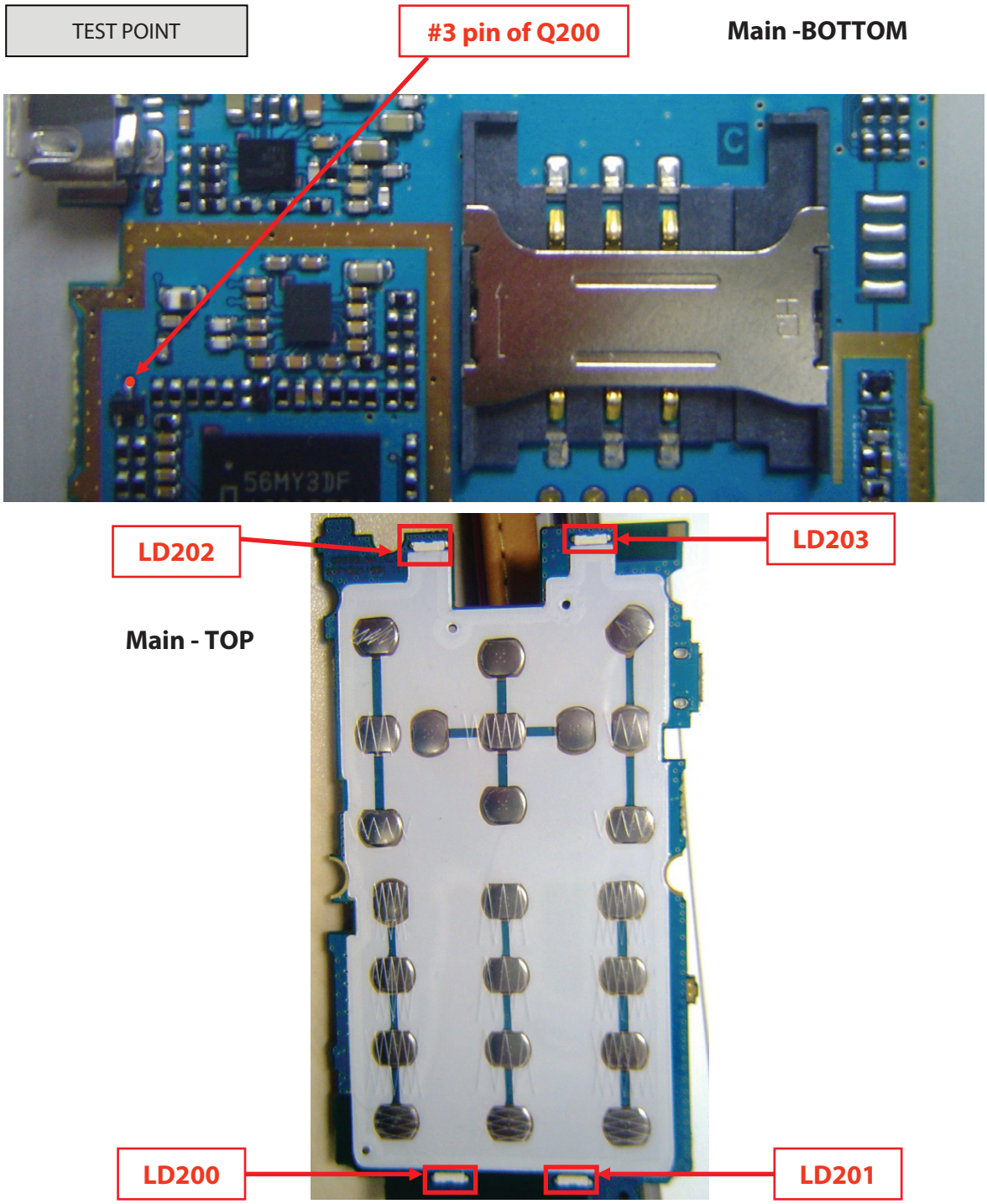
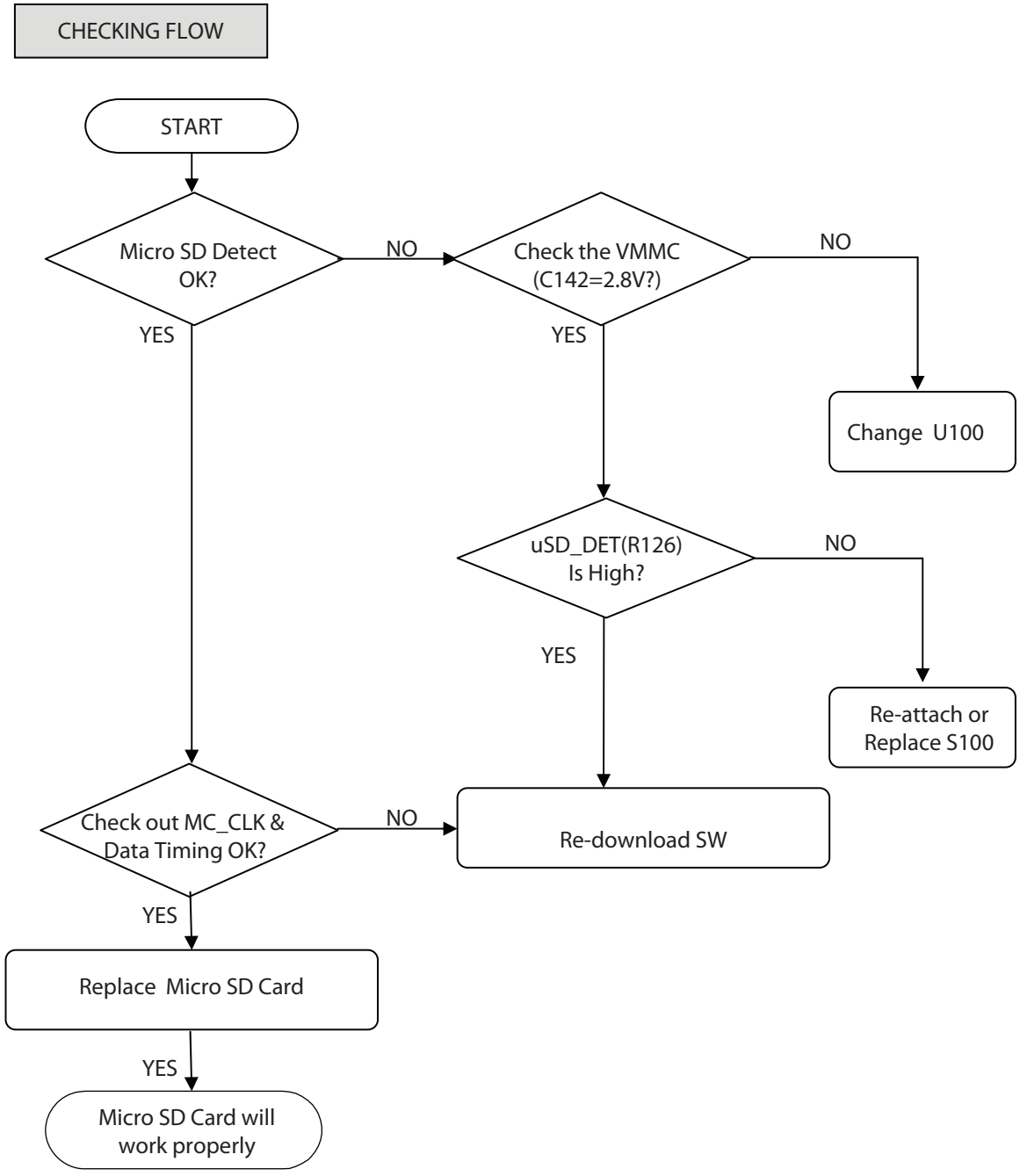


Figure 4.14

4.15 Micro SD (uSD) Trouble



TEST POINT

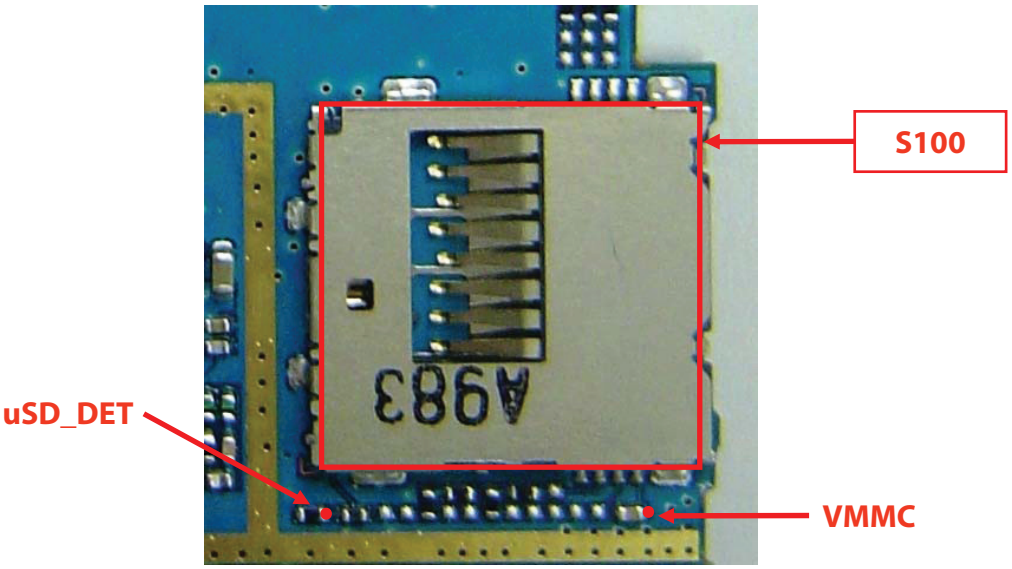
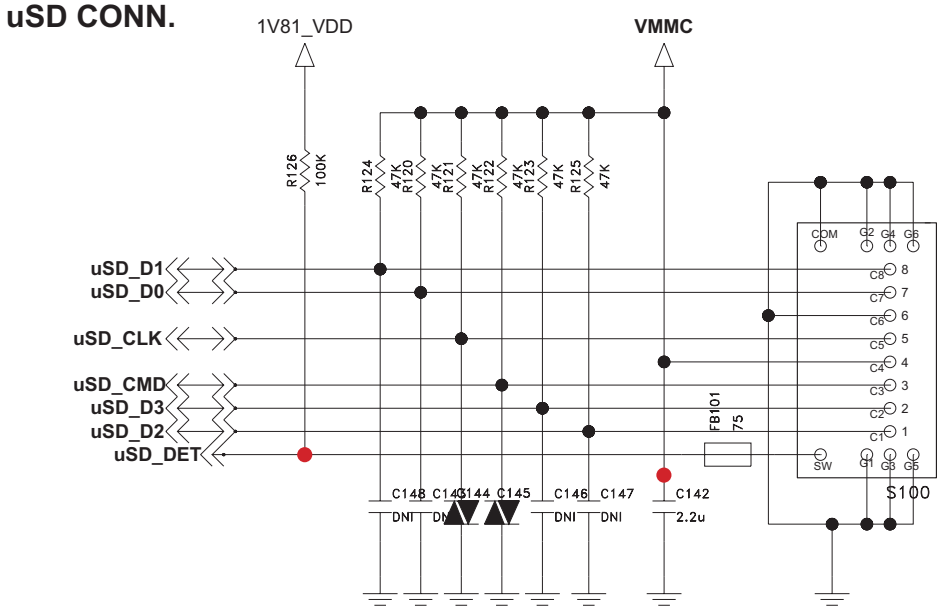


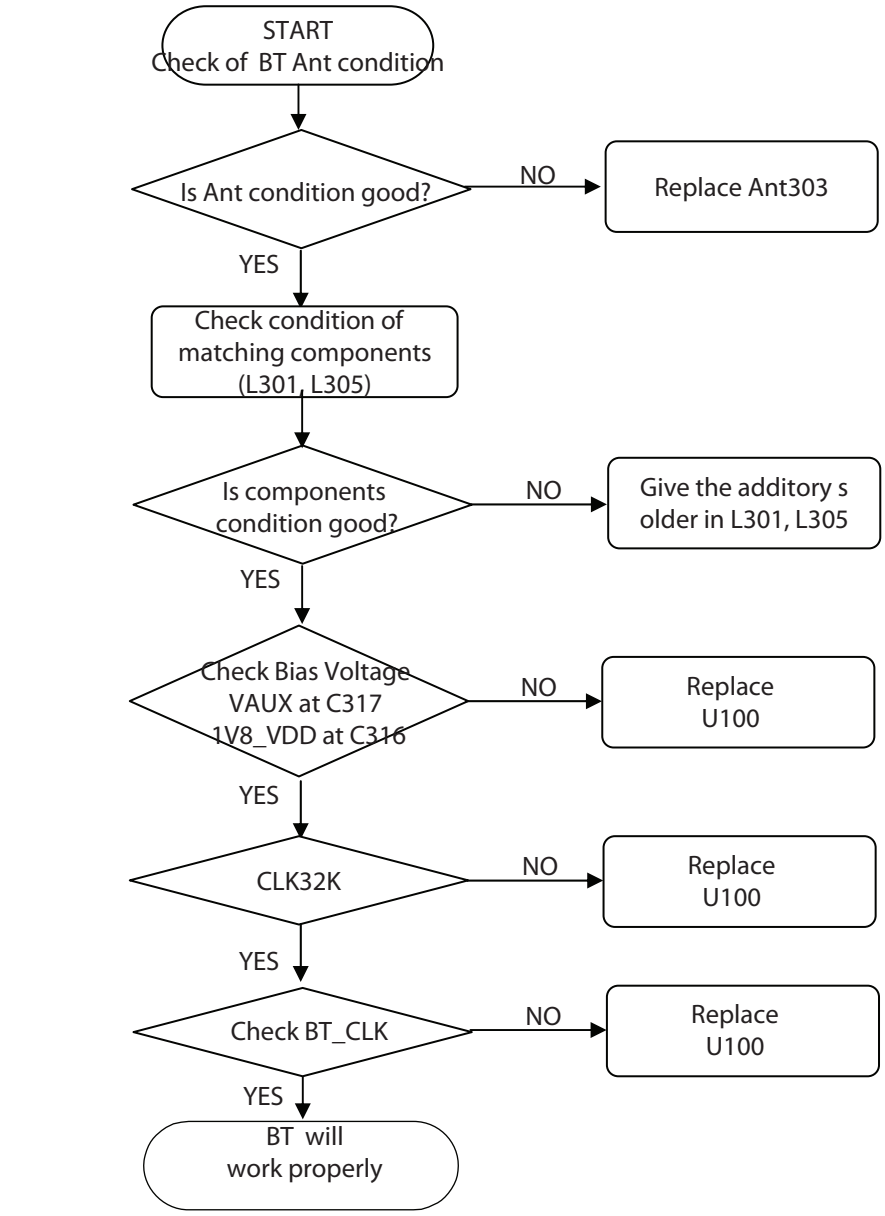
Figure 4.15

CIRCUIT

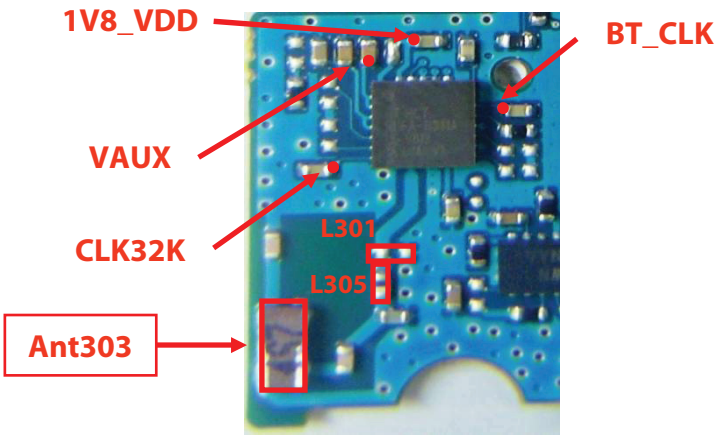


4.16 Bluetooth Trouble

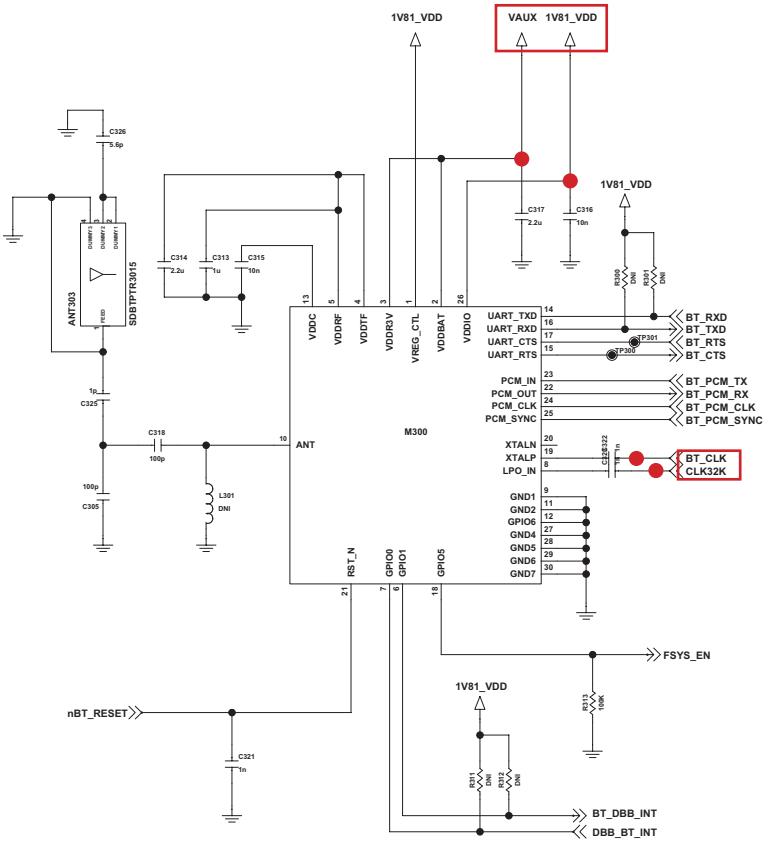
CHECKING FLOW



TEST POINT

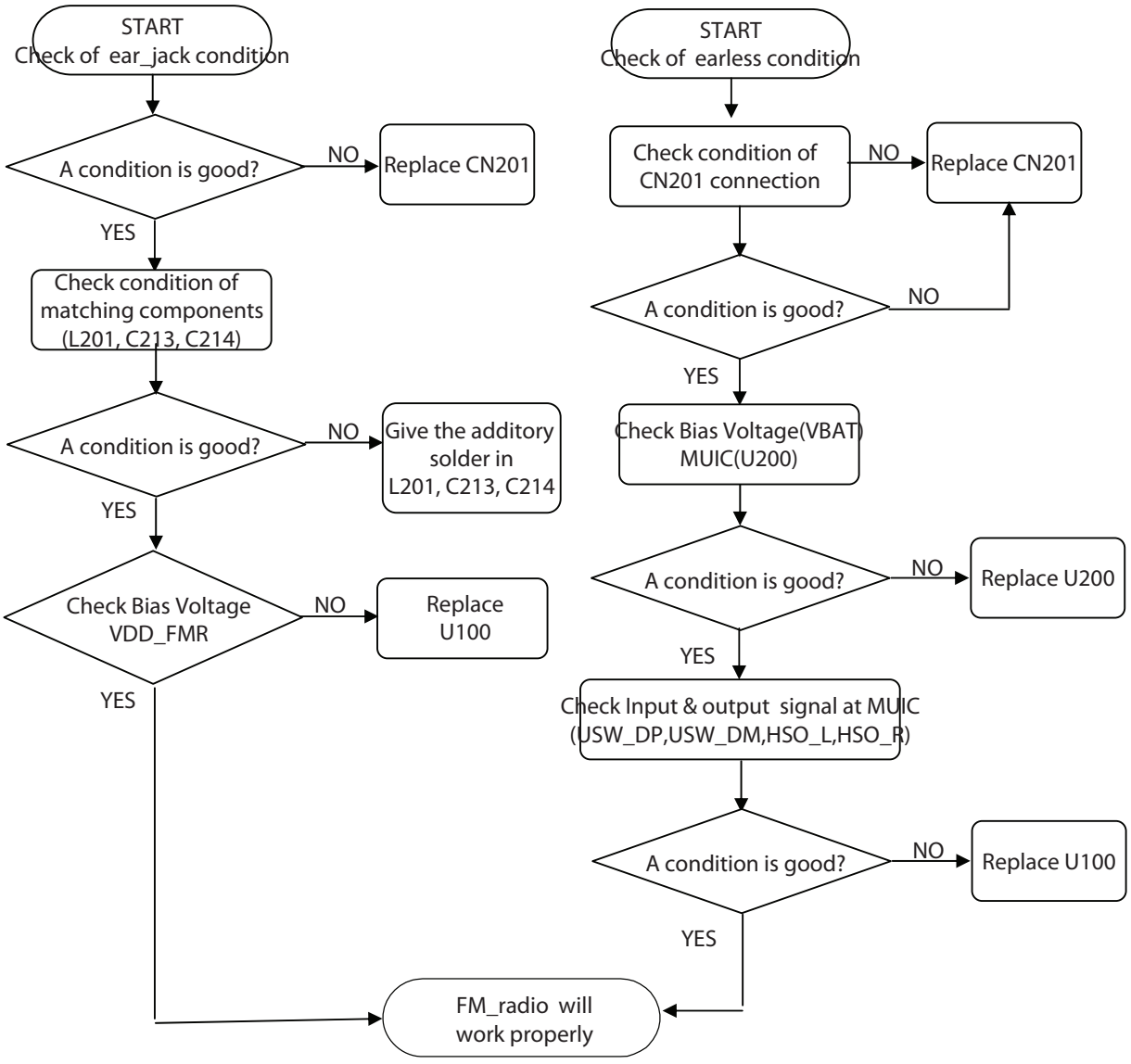


CIRCUIT

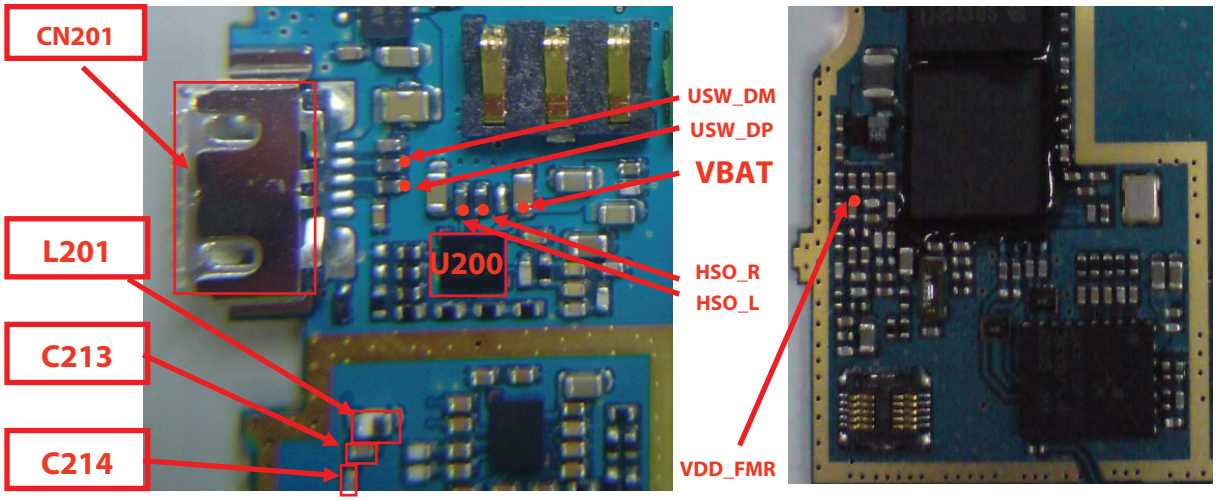


4.17 FM Radio Trouble

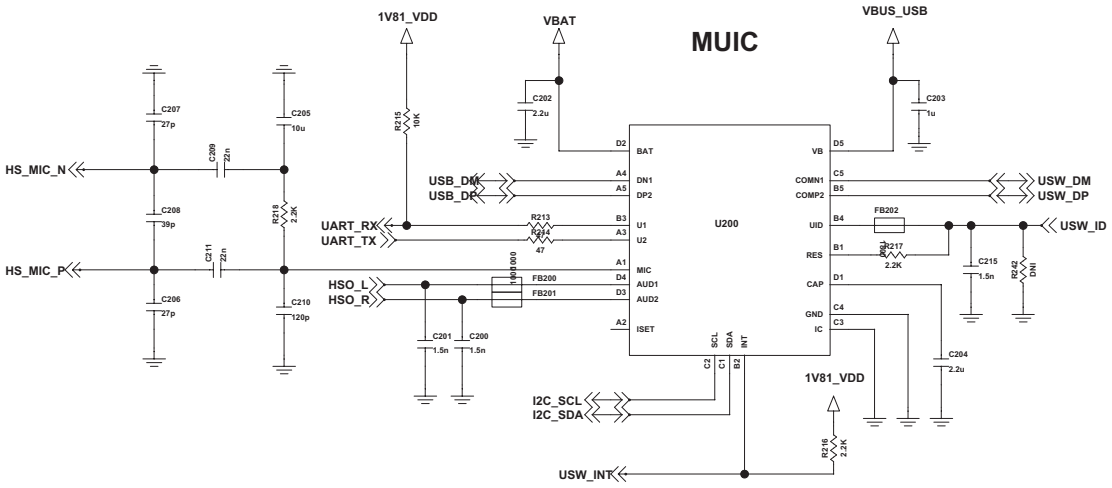
CHECKING FLOW

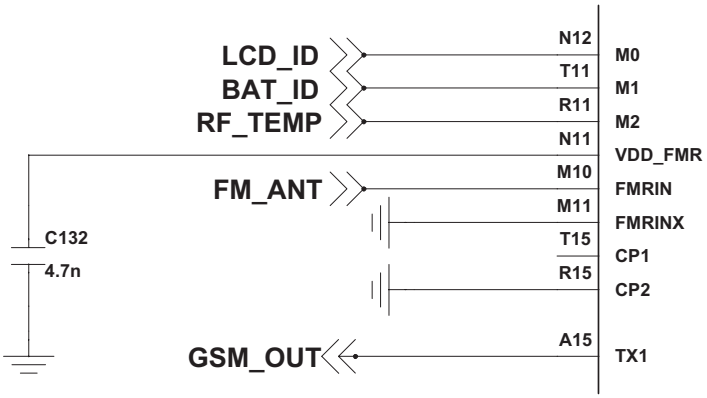


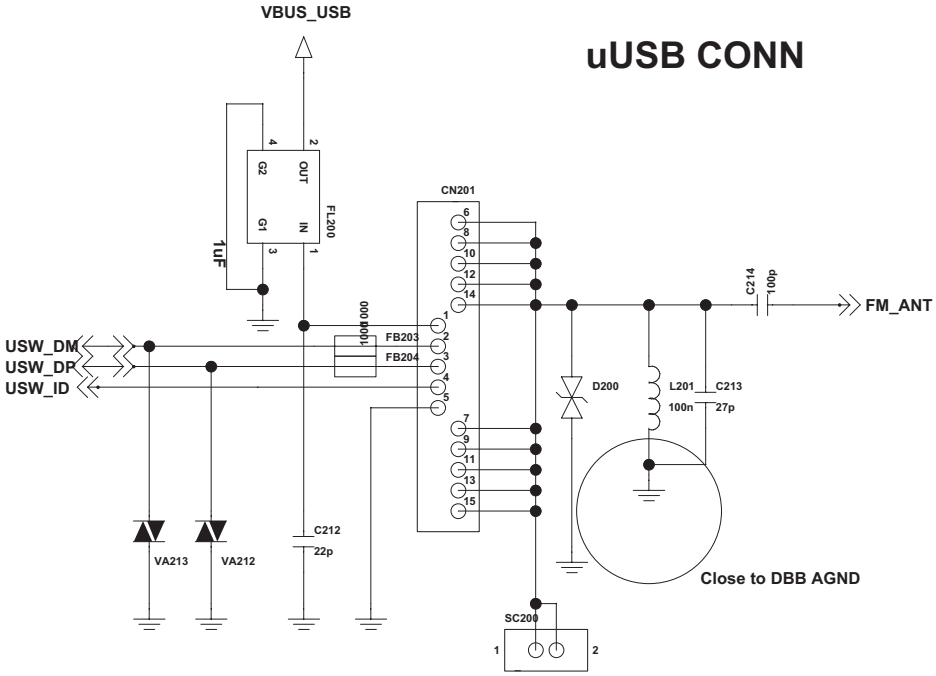
TEST POINT



CIRCUIT

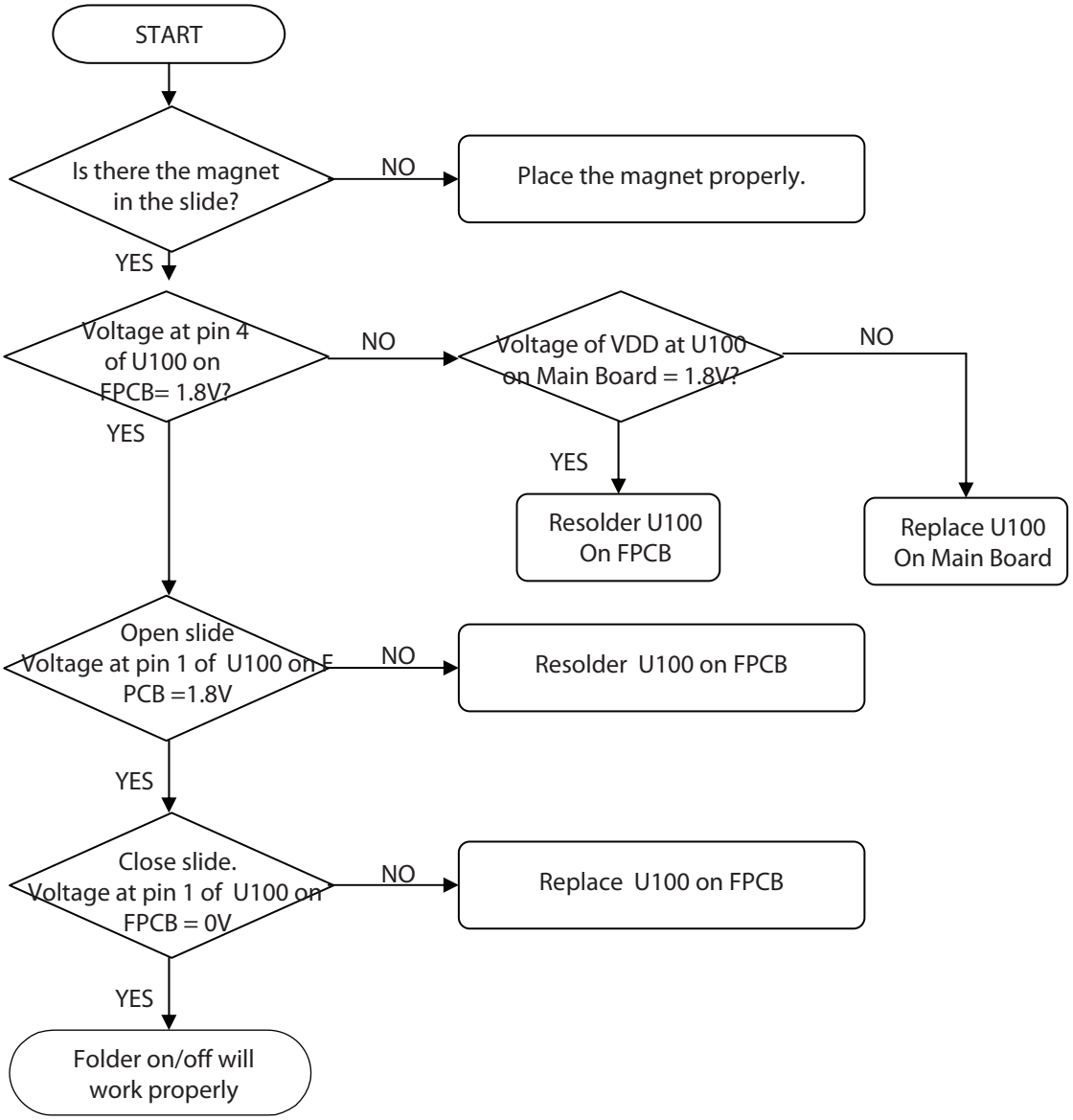






4.18 Folder on/off Trouble

CHECKING FLOW



TEST POINT

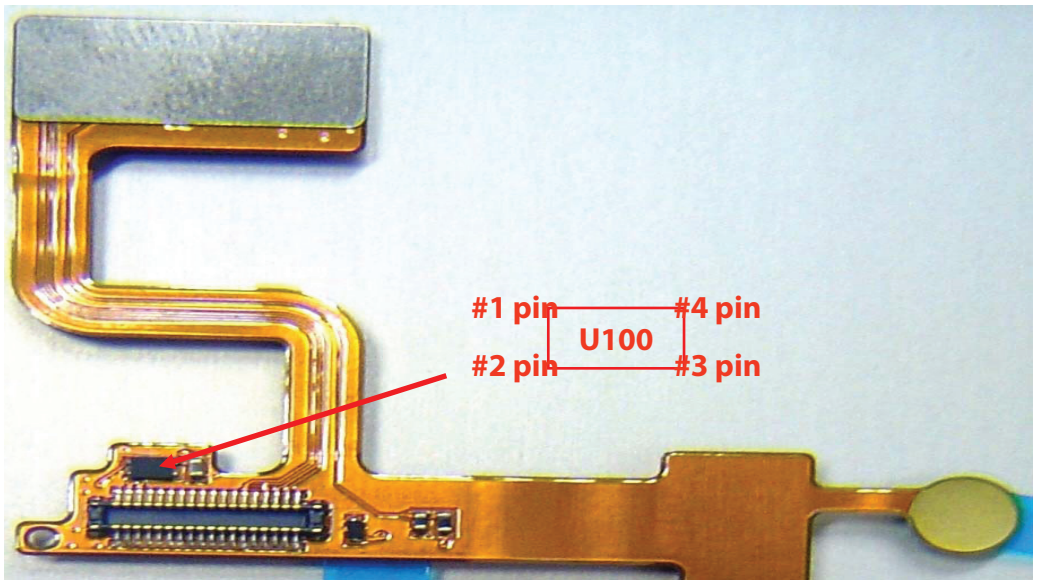
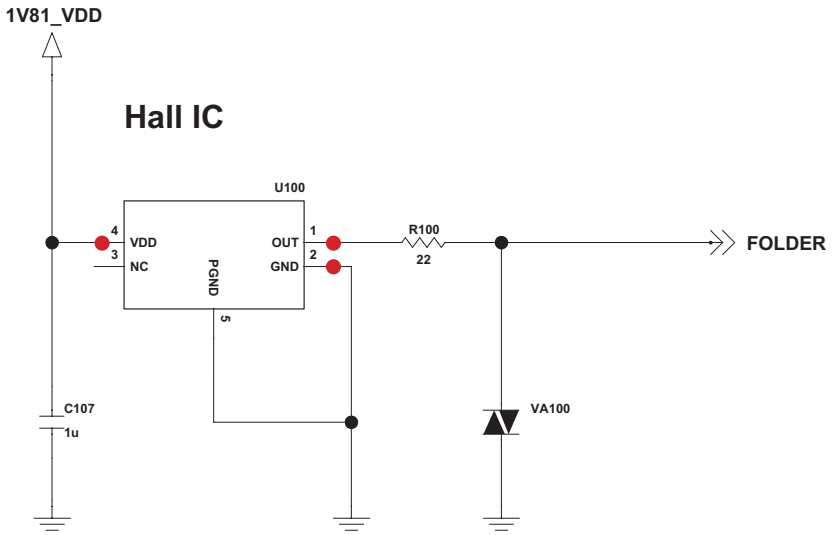


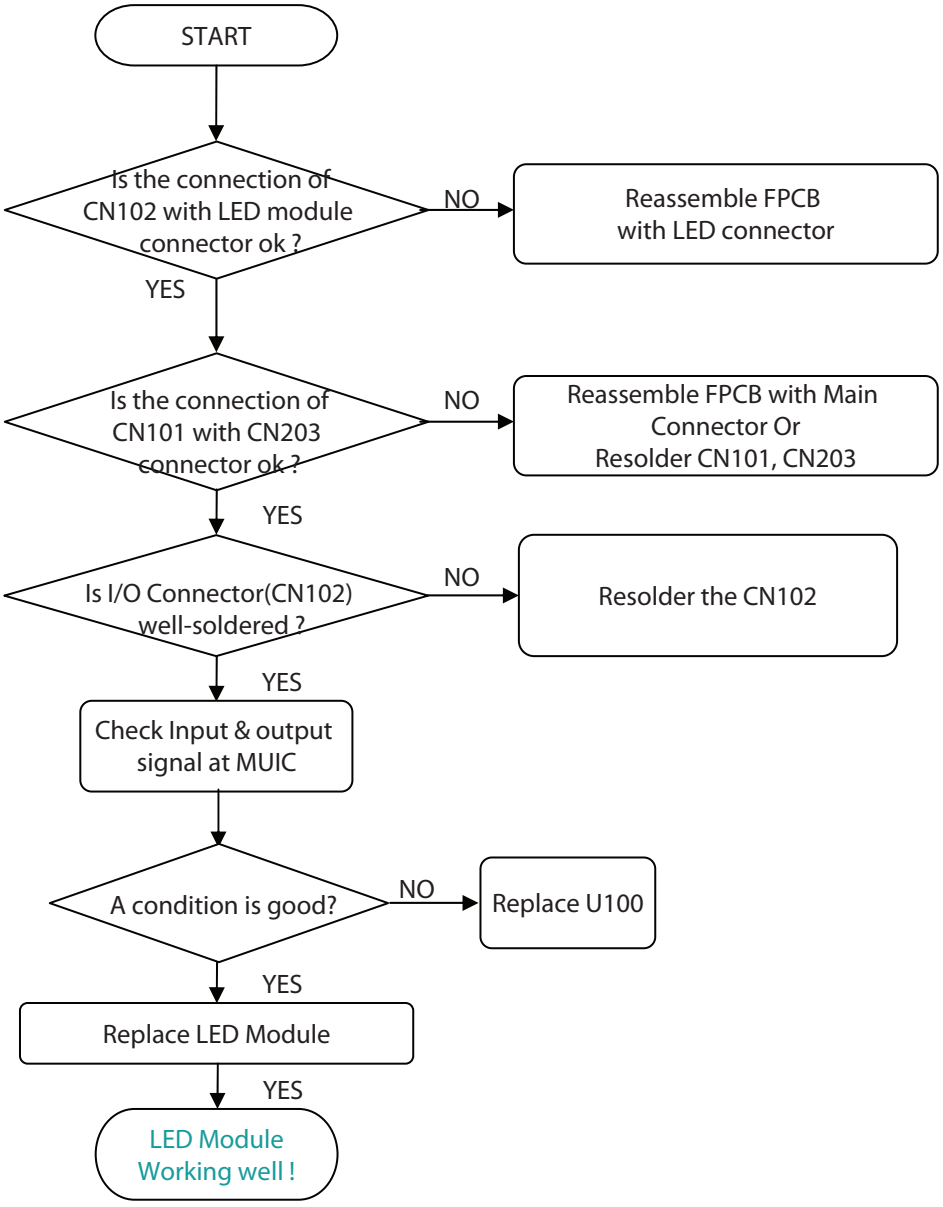
Figure 4.18

CIRCUIT



4.19 LED Module Trouble

CHECKING FLOW



TEST POINT

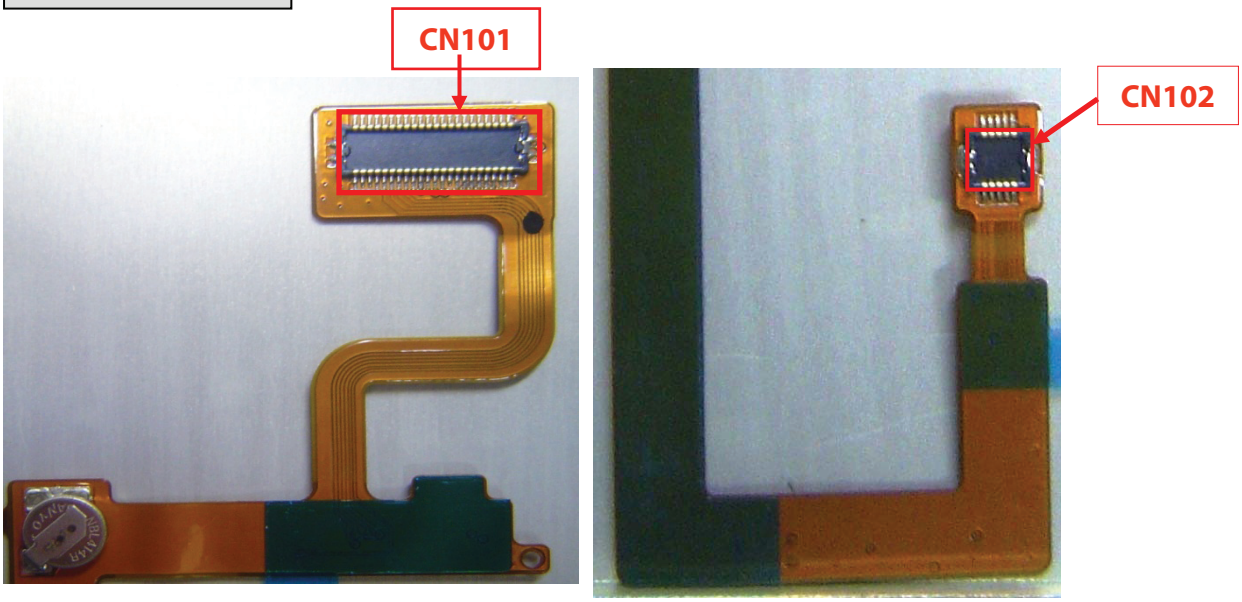
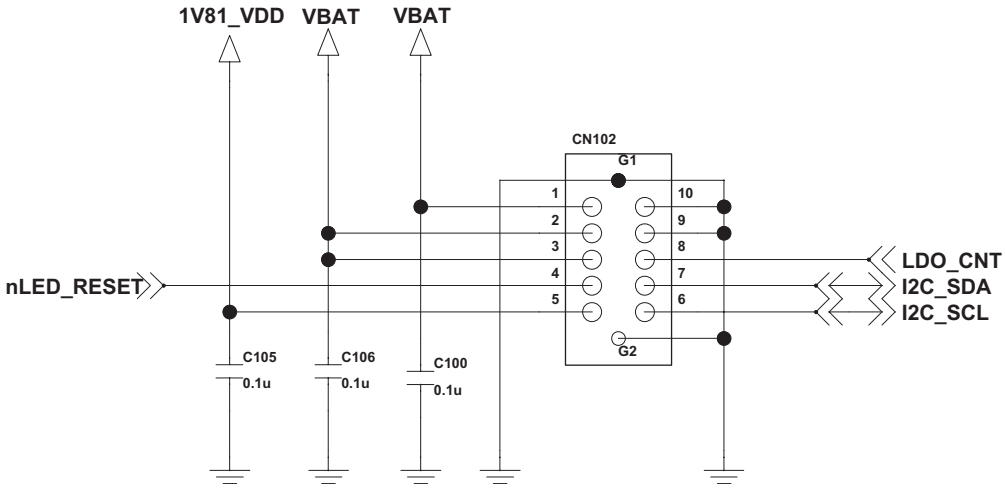


Figure 4.19

CIRCUIT



5. DOWNLOAD

5.1 S/W Download

Preparation
- Target terminal
- PIF-Union
- RS-232 Cable and PIF-UNION to Phone interface Cable
- Power Supply or Battery
- PC supporting RS-232 with Windows 2000 or newer**.**

If you are going to use battery, the voltage of the battery should be over 3.7V for stable power supplying during S/W download.

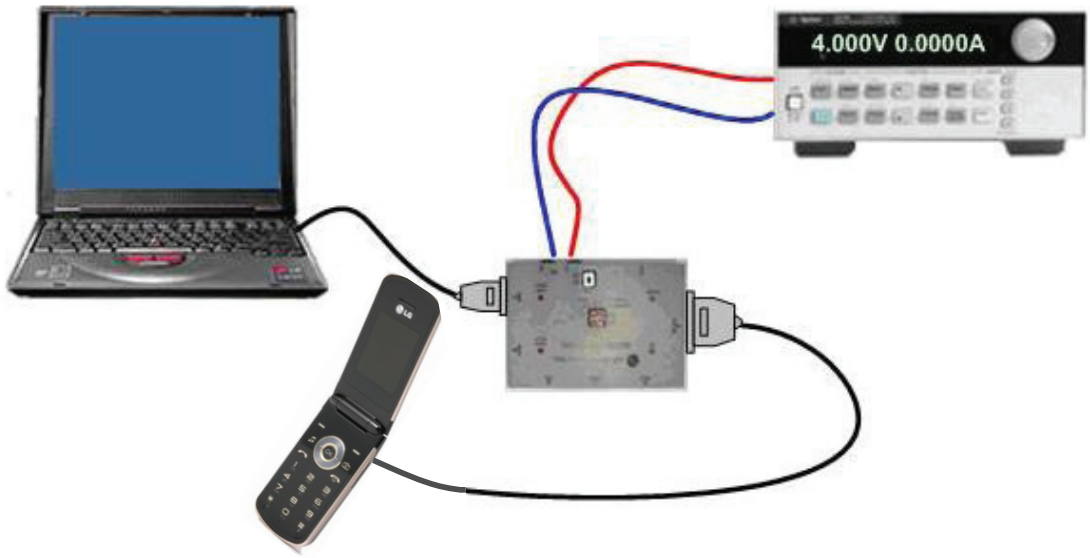
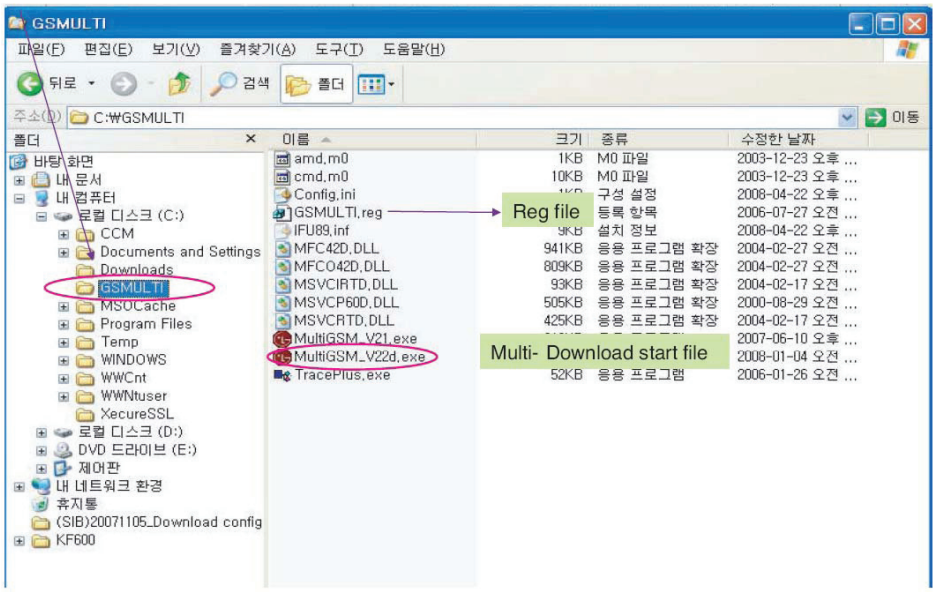


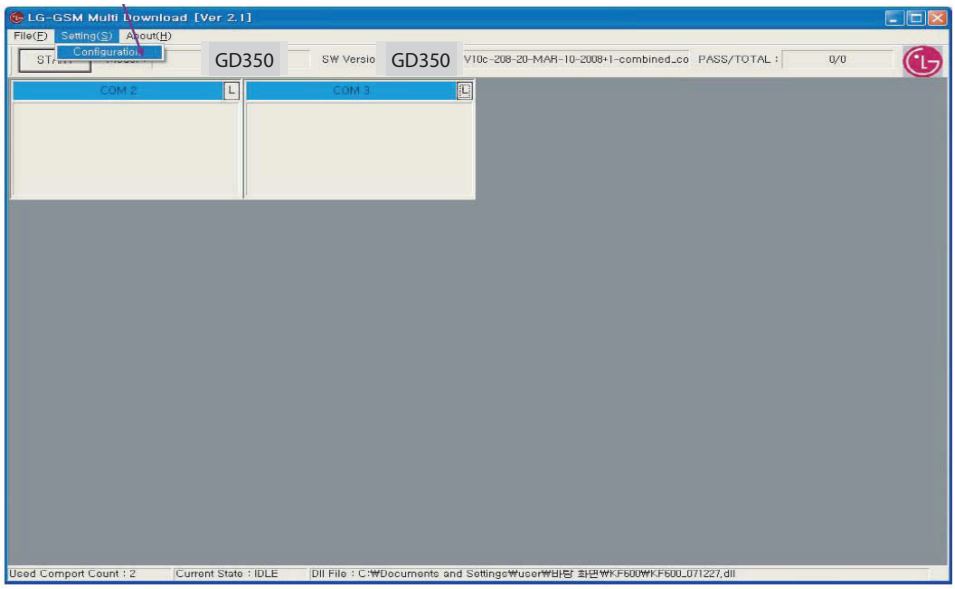
Figure 5-1. S/W download & upgrade setup

5.2 Download program user guide

1. After "GSMULTI" folder copy, paste C:

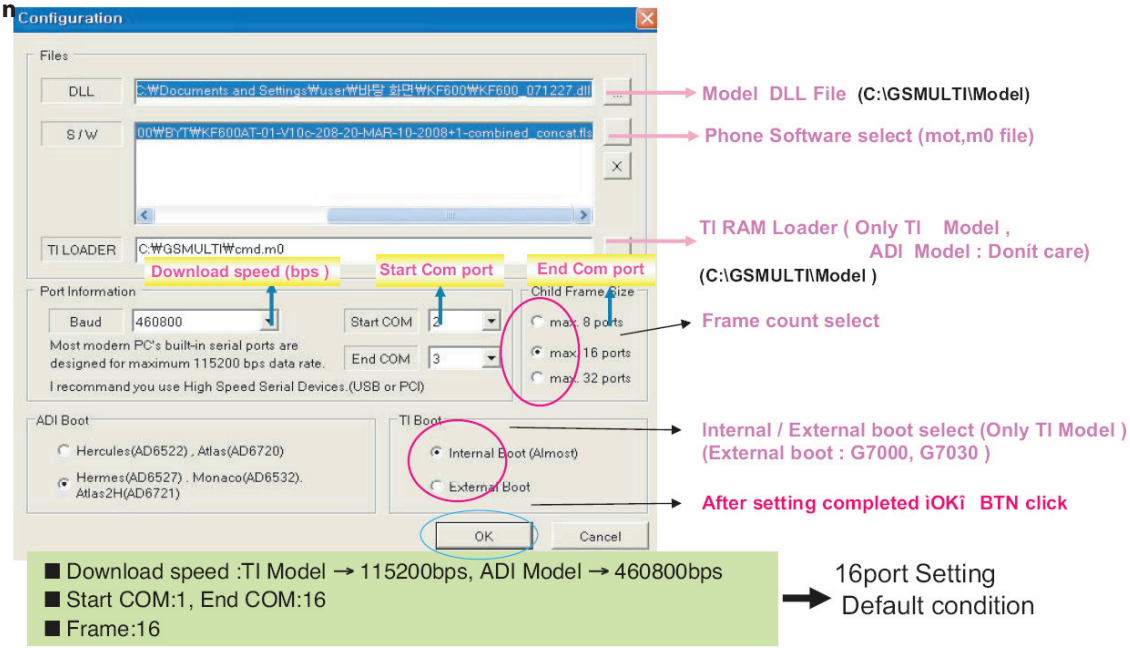


2. "MultiGSM.exe" execution file execute



5.3 Multi-Download Program Setting (Model-Base)

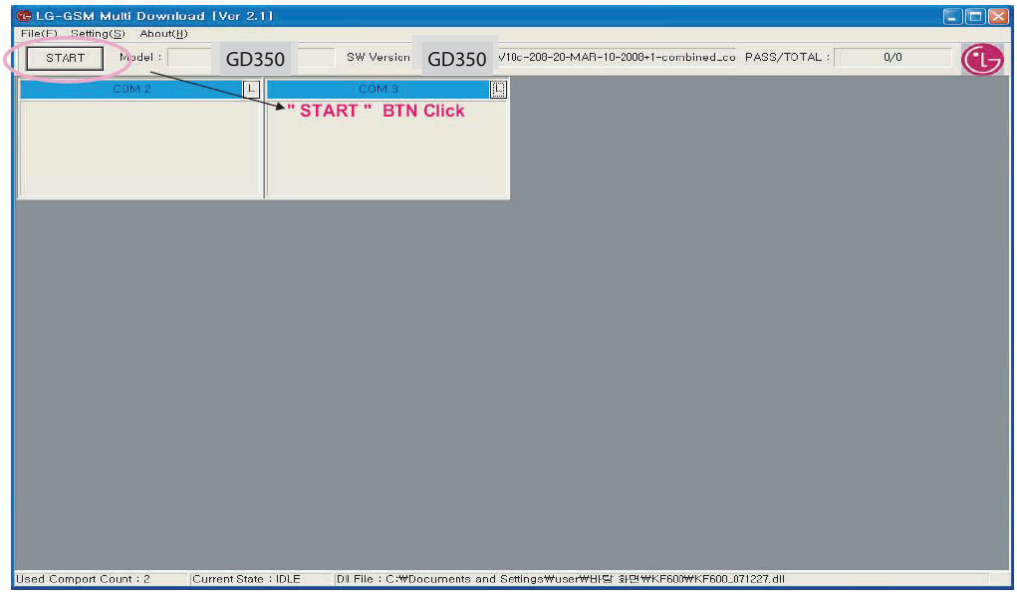
■ **Multi-Download Program Execution ? Setting : Configuration**



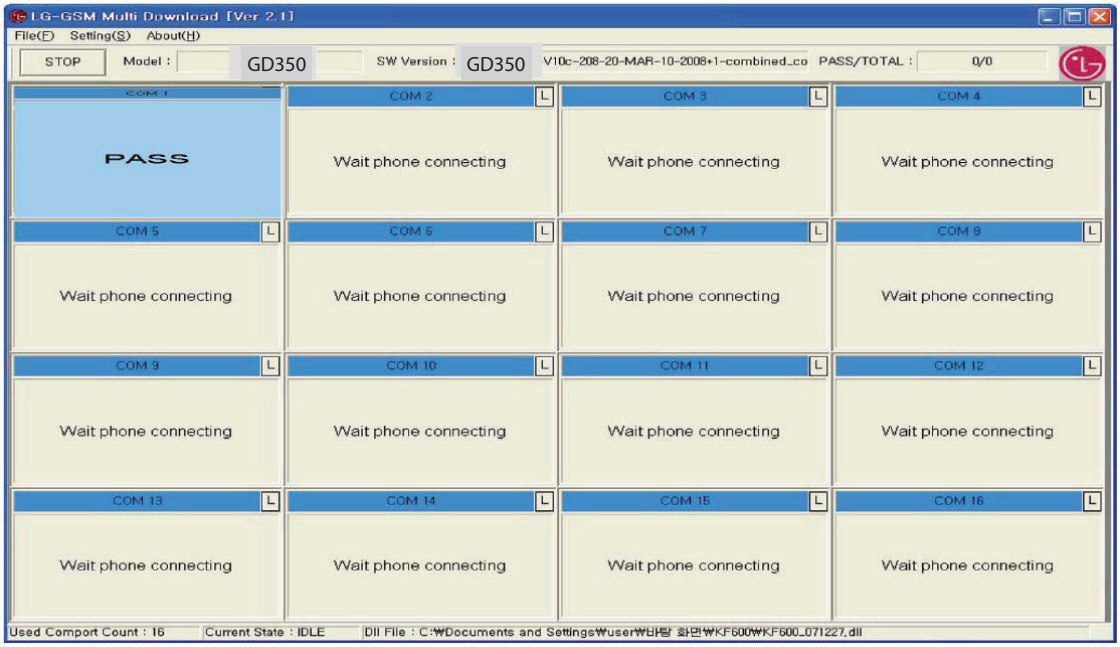
■ Download speed :TI Model → 115200bps, ADI Model → 460800bps
■ Start COM:1, End COM:16
■ Frame:16

→ 16port Setting
Default condition

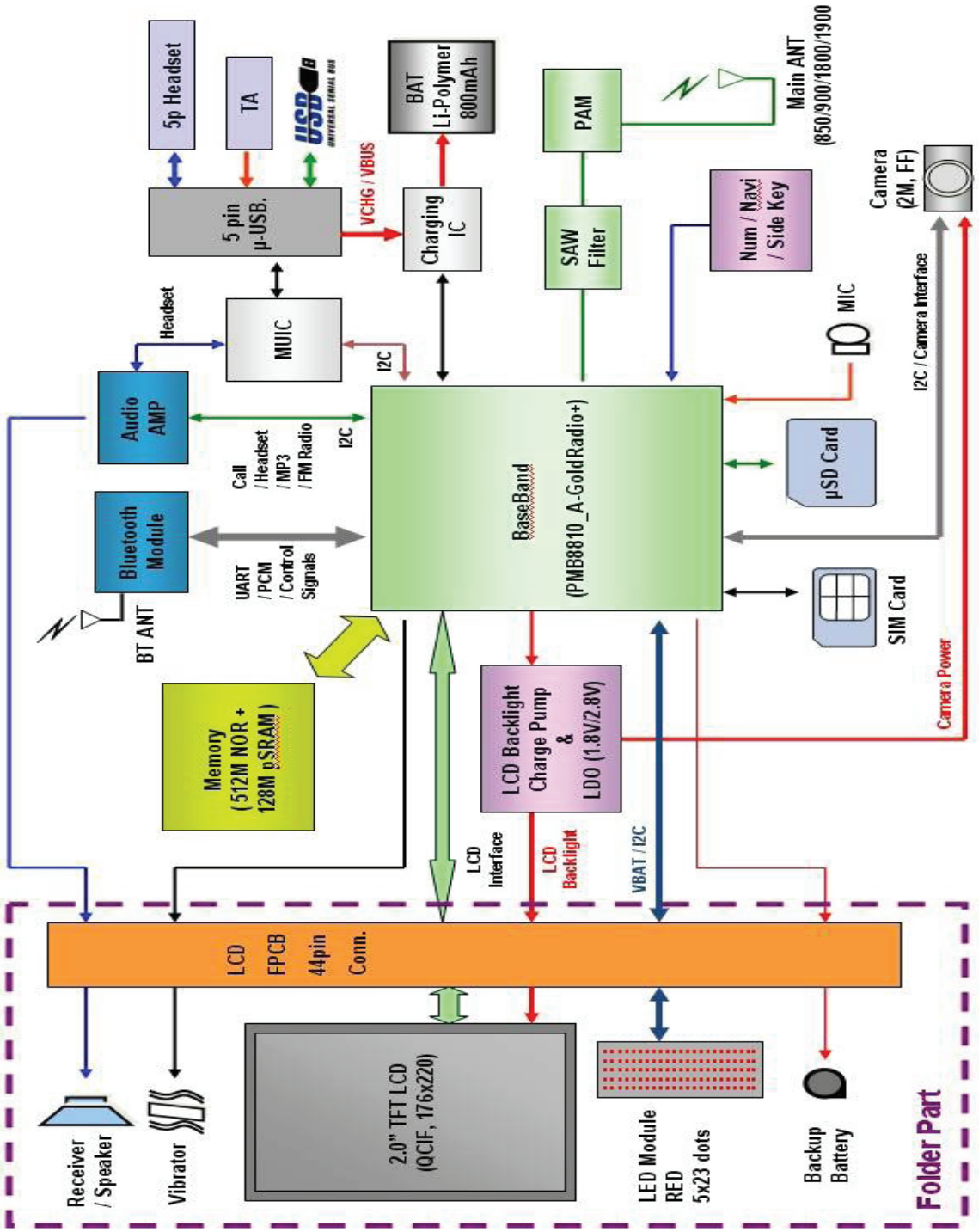
■ **Setting Completed**



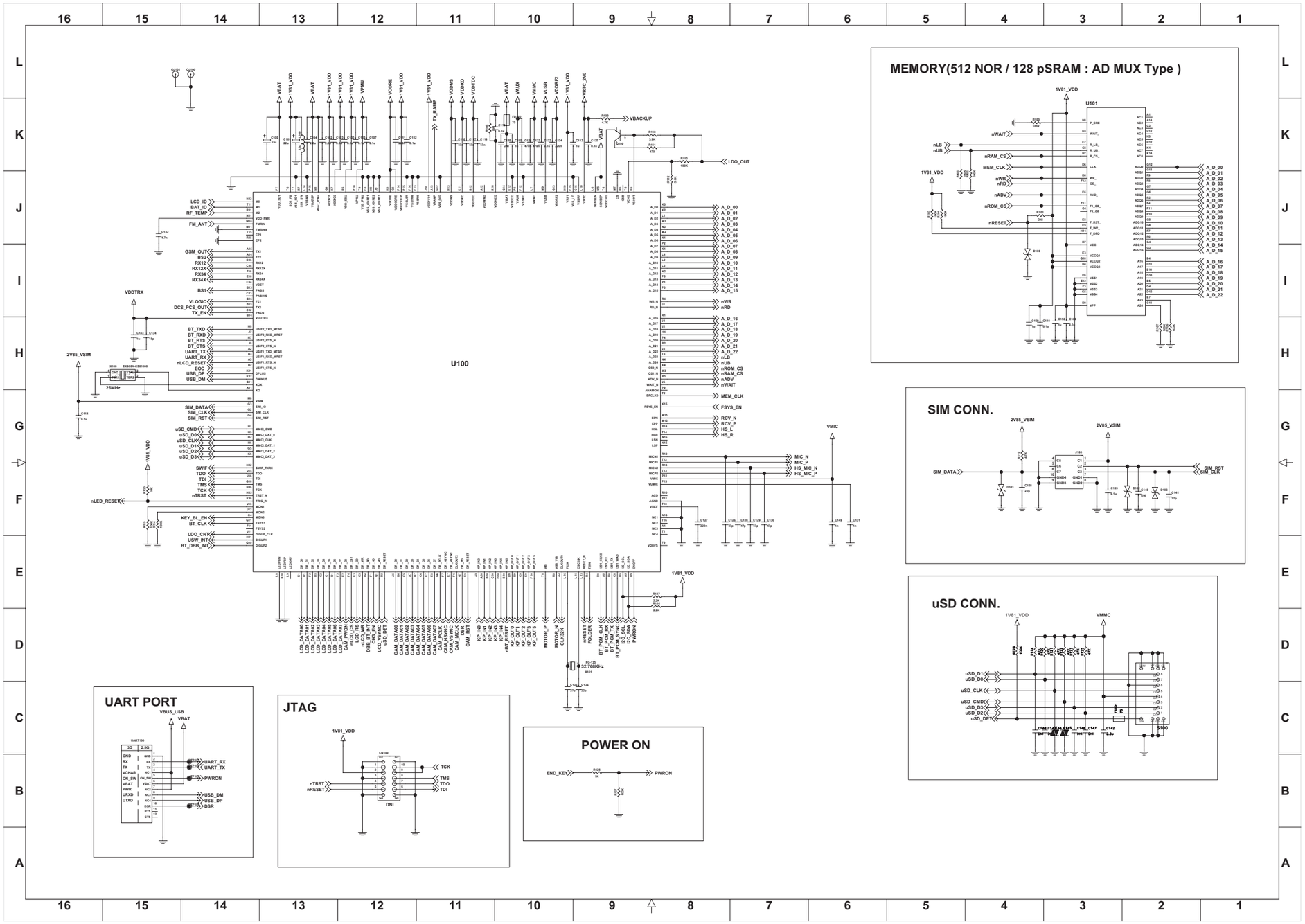
■ Stand-by Condition: “Wait phone connecting” confirm -> Phone connection



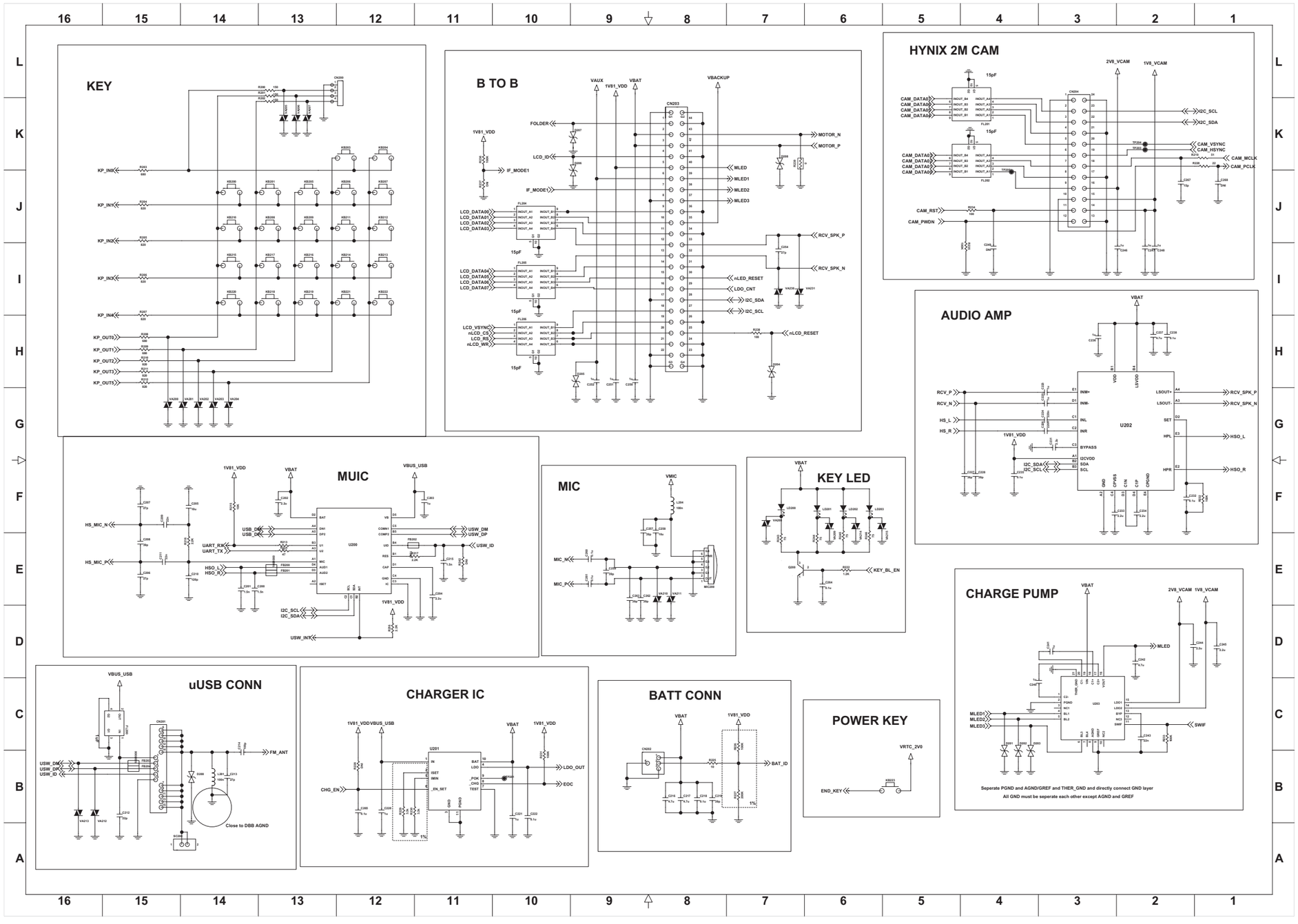
6. BLOCK DIAGRAM



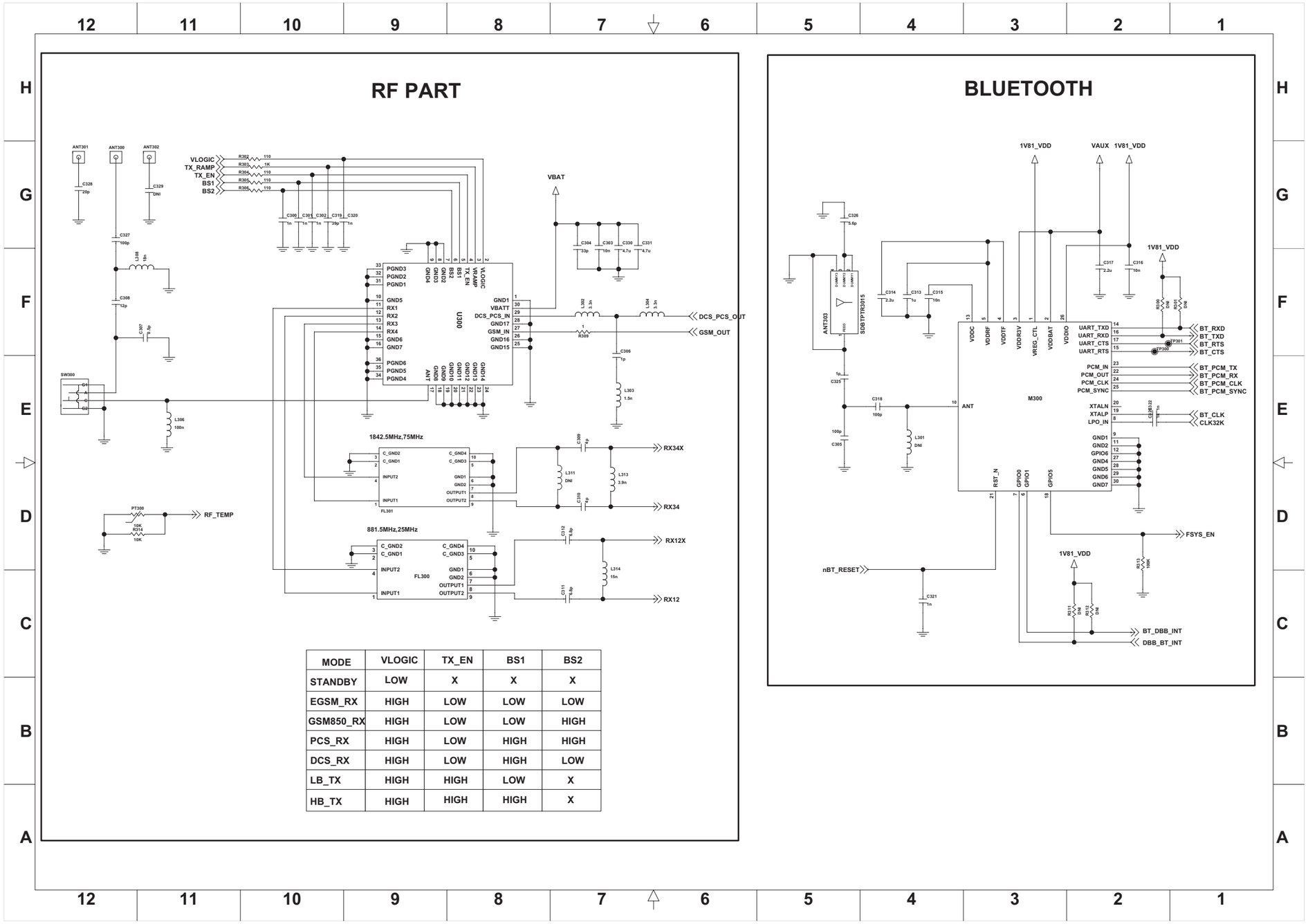
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

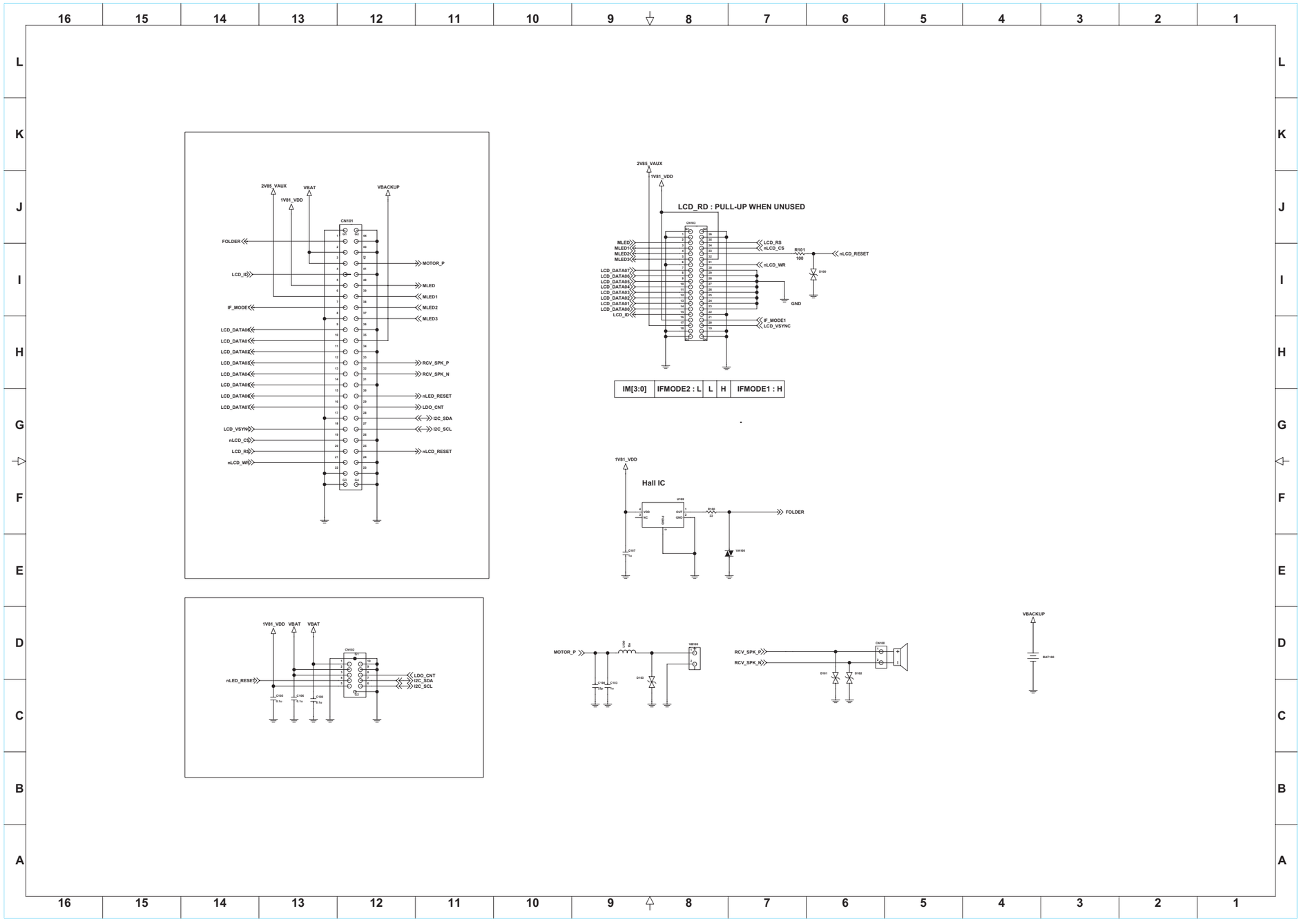


7. CIRCUIT DIAGRAM



MODE	VLOGIC	TX_EN	BS1	BS2
STANDBY	LOW	X	X	X
EGSM_RX	HIGH	LOW	LOW	LOW
GSM850_RX	HIGH	LOW	LOW	HIGH
PCS_RX	HIGH	LOW	HIGH	HIGH
DCS_RX	HIGH	LOW	HIGH	LOW
LB_TX	HIGH	HIGH	LOW	X
HB_TX	HIGH	HIGH	HIGH	X

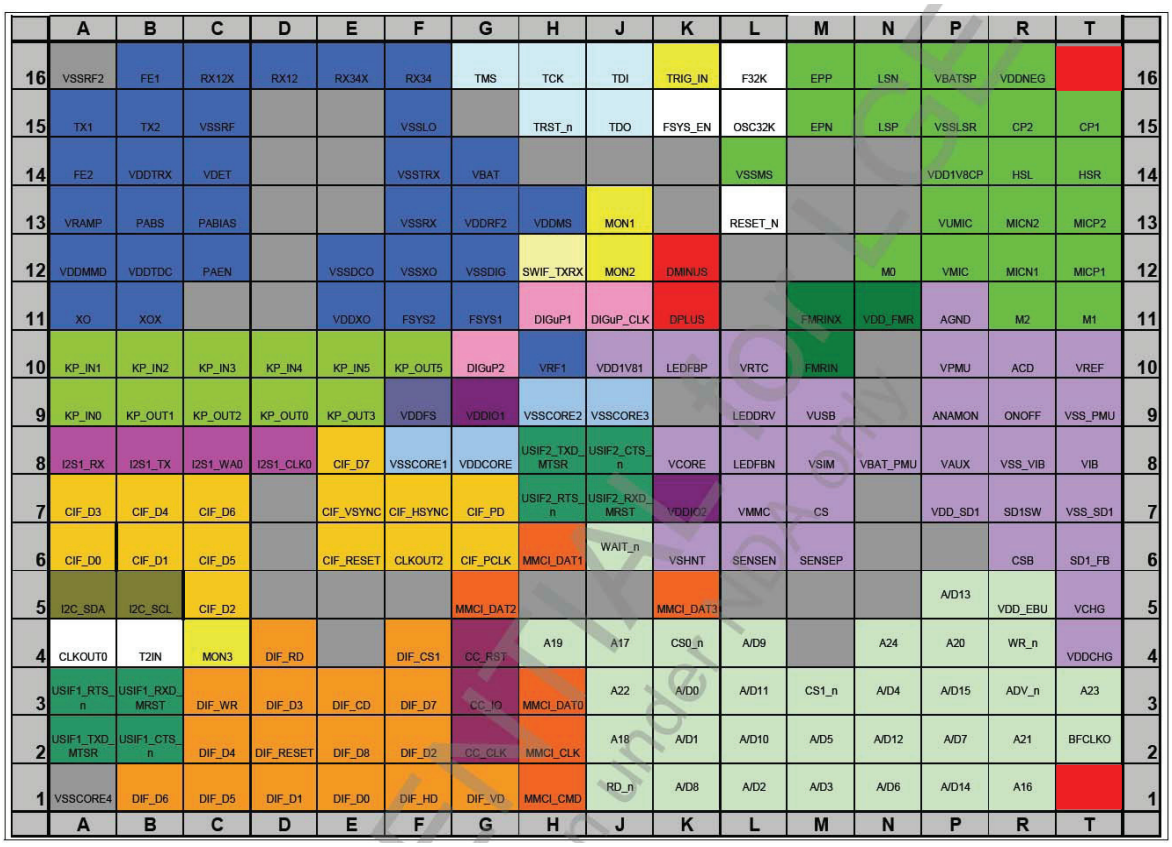
7. CIRCUIT DIAGRAM



8. BGA PIN MAP

8.1 BGA IC pin check (U101)

▪ **Ball Diagram (Top View), PMB8810(A-GOLDRADIO+)**

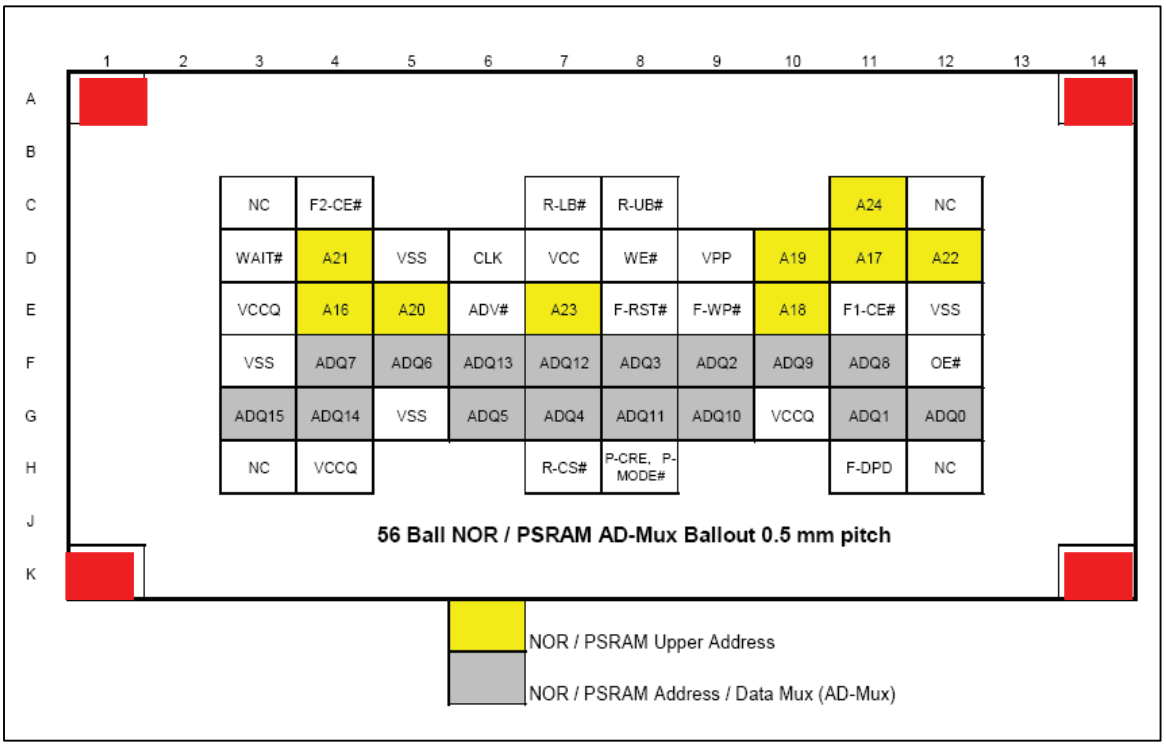


	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	
16	VSSRF2	FE1	RX12X	RX12	RX34X	RX34	TMS	TCK	TDI	TRIG_IN	F32K	EPP	LSN	VBATSP	VDDNEG		16
15	TX1	TX2	VSSRF			VSSLO		TRST_n	TDO	FSYS_EN	OSC32K	EPN	LSP	VSSLSR	CP2	CP1	15
14	FE2	VDDTRX	VDET			VSSTRX	VBAT				VSSMS			VDD1V8CP	HSL	HSR	14
13	VRAMP	PABS	PABIAS			VSSRX	VDDRF2	VDDMS	MON1		RESET_N			VUMIC	MICN2	MICP2	13
12	VDDMMD	VDDTDC	PAEN		VSSDCO	VSSXO	VSSDIG	SWIF_TXRX	MON2	DMINUS			M0	VMIC	MICN1	MICP1	12
11	XO	XOX			VDDXO	FSYS2	FSYS1	DIGuP1	DIGuP_CLK	DPLUS		FMRINX	VDD_FMR	AGND	M2	M1	11
10	KP_IN1	KP_IN2	KP_IN3	KP_IN4	KP_IN5	KP_OUT5	DIGuP2	VRF1	VDD1V81	LEDFBP	VRTC	FMRIN		VPMU	ACD	VREF	10
9	KP_IN0	KP_OUT1	KP_OUT2	KP_OUT0	KP_OUT3	VDDFS	VDDIO1	VSSCORE2	VSSCORE3		LEDDRV	VUSB		ANAMON	ONOFF	VSS_PMU	9
8	I2S1_RX	I2S1_TX	I2S1_WA0	I2S1_CLK0	CIF_D7	VSSCORE1	VDDCORE	USIF2_TXD_MTSR	USIF2_CTS_n	VCORE	LEDFBN	VSIM	VBAT_PMU	VAUX	VSS_VIB	VIB	8
7	CIF_D3	CIF_D4	CIF_D6		CIF_VSYNC	CIF_HSYNC	CIF_PD	USIF2_RTS_n	USIF2_RXD_MRST	VDDIO2	VMMC	CS		VDD_SD1	SD1SW	VSS_SD1	7
6	CIF_D0	CIF_D1	CIF_D5		CIF_RESET	CLKOUT2	CIF_PCLK	MMCI_DAT1	WAIT_n	VSHNT	SENSEN	SENSEP			CSB	SD1_FB	6
5	I2C_SDA	I2C_SCL	CIF_D2				MMCI_DAT2			MMCI_DAT3				A/D13	VDD_EBU	VCHG	5
4	CLKOUT0	T2IN	MON3	DIF_RD		DIF_CS1	CC_RST	A19	A17	CS0_n	A/D9		A24	A20	WR_n	VDDCHG	4
3	USIF1_RTS_n	USIF1_RXD_MRST	DIF_WR	DIF_D3	DIF_CD	DIF_D7	CC_IO	MMCI_DAT0	A22	A/D0	A/D11	CS1_n	A/D4	A/D15	ADV_n	A23	3
2	USIF1_TXD_MTSR	USIF1_CTS_n	DIF_D4	DIF_RESET	DIF_D8	DIF_D2	CC_CLK	MMCI_CLK	A18	A/D1	A/D10	A/D5	A/D12	A/D7	A21	BFCLKO	2
1	VSSCORE4	DIF_D6	DIF_D5	DIF_D1	DIF_D0	DIF_HD	DIF_VD	MMCI_CMD	RD_n	A/D8	A/D2	A/D3	A/D6	A/D14	A16		1
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	

: not in use

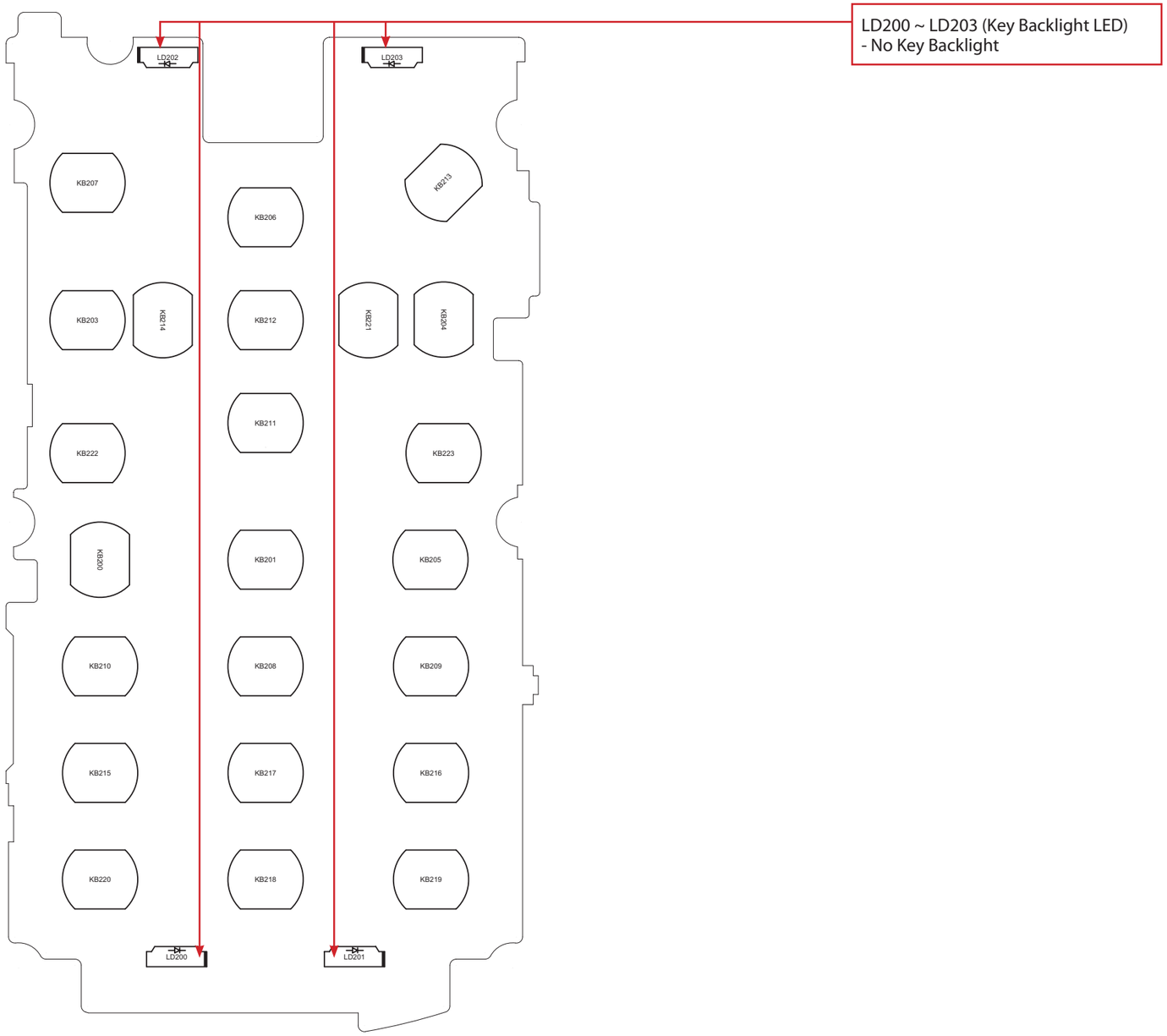
8.2 BGA IC pin check (U100)

▪ **Ball Diagram (Top View), PF38F5060M0Y3DF**



: not in use

9. PCB LAYOUT



GD350_MAIN_SPFY0211001_1.0_TOP

9. PCB LAYOUT

ANT303 (BT Antenna)
- No BT Operation

M300 (BT Module)
- No BT Operation

U201 (Charging IC)
- No Charging

CN202 (Battery Connector)
- No Power On

U200 (MUIC)
- No Charging, UART

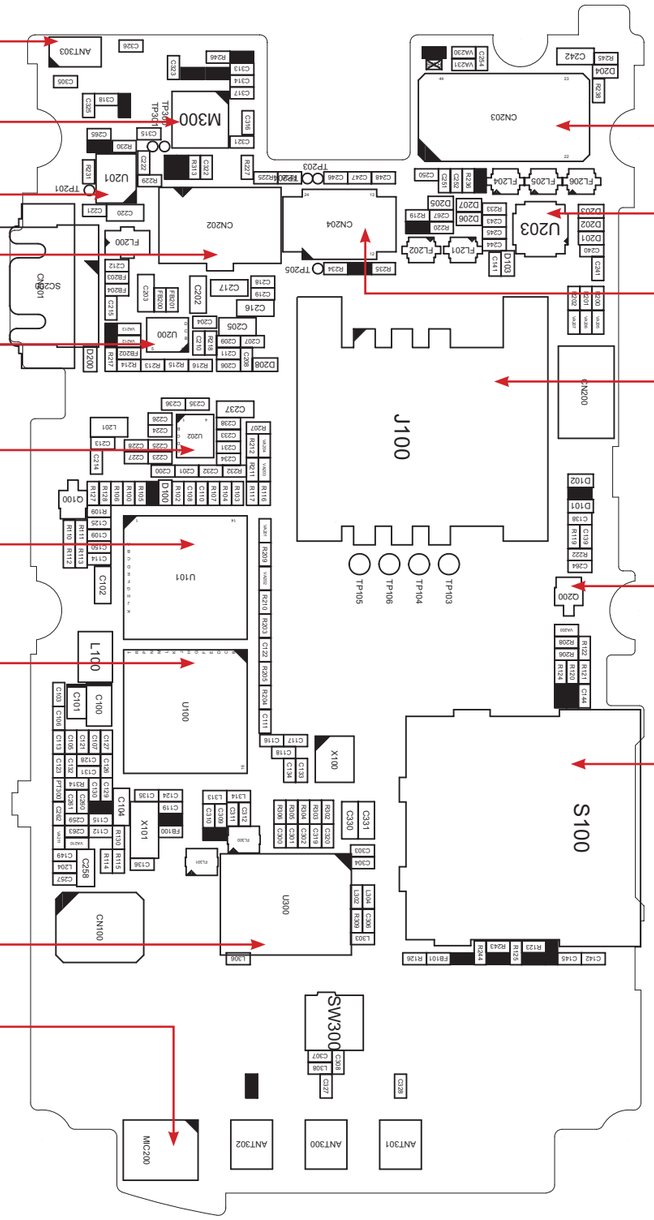
U202 (Audio AMP)
- No Sound

U101 (Memory)
- No Power On
- No Download

U100 (BB IC)
- No Power On
- No Download
- No Display…

U300 (PAM)
- No Call

MIC200 (Main Mic)
- No Mic Operation



CN203 (LCD FPCB Connector)
- No LCD Display

U203 (Charge Pump)
- No LCD Backlight

CN204 (Camera Connector)
- No Camera

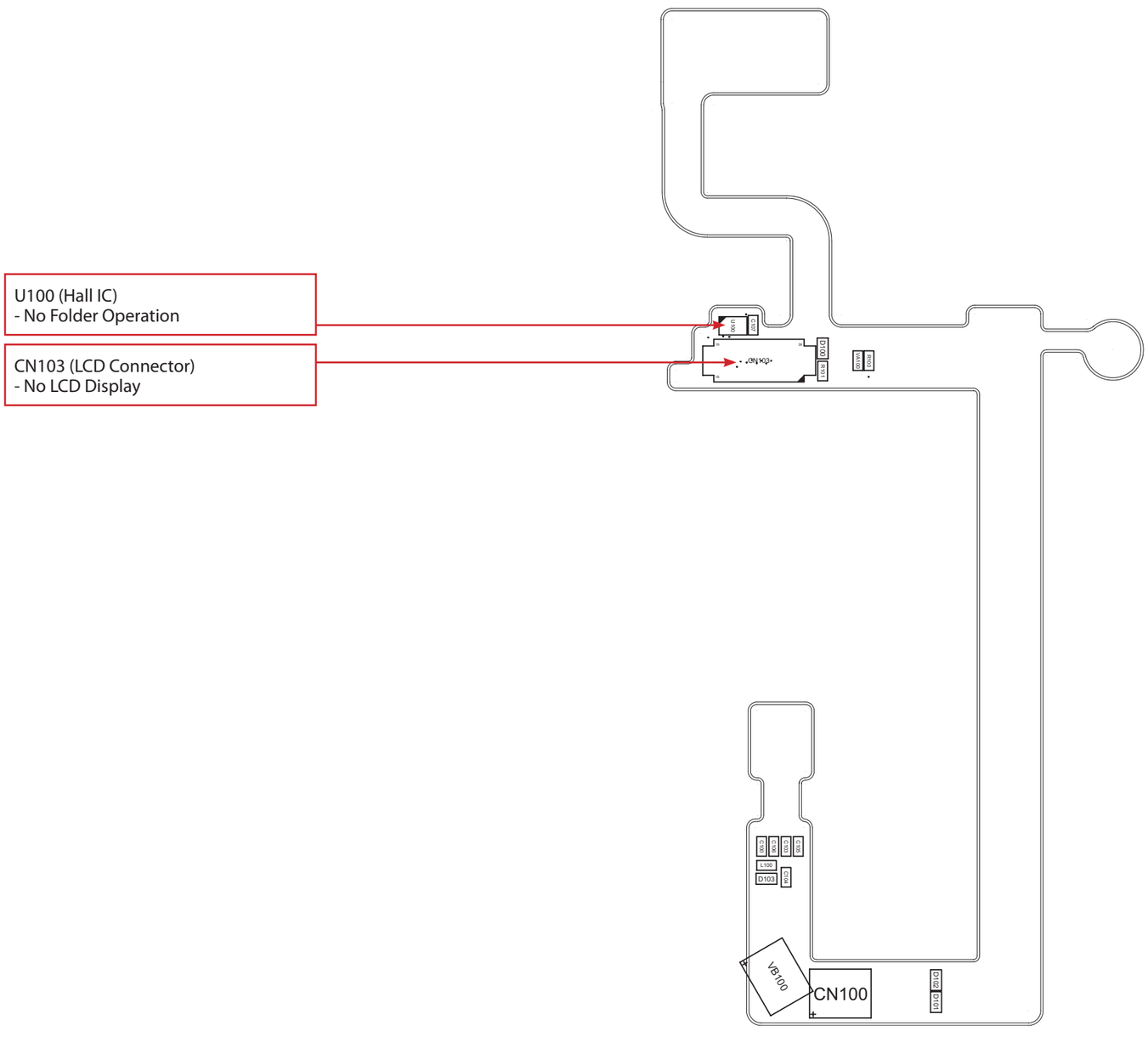
J100 (SIM Connector)
- No SIM Operation

Q200 (Tr. for Key Backlight)
- No Key Backlight

S100 (µ-SD Connector)
- No µ-SD Operation

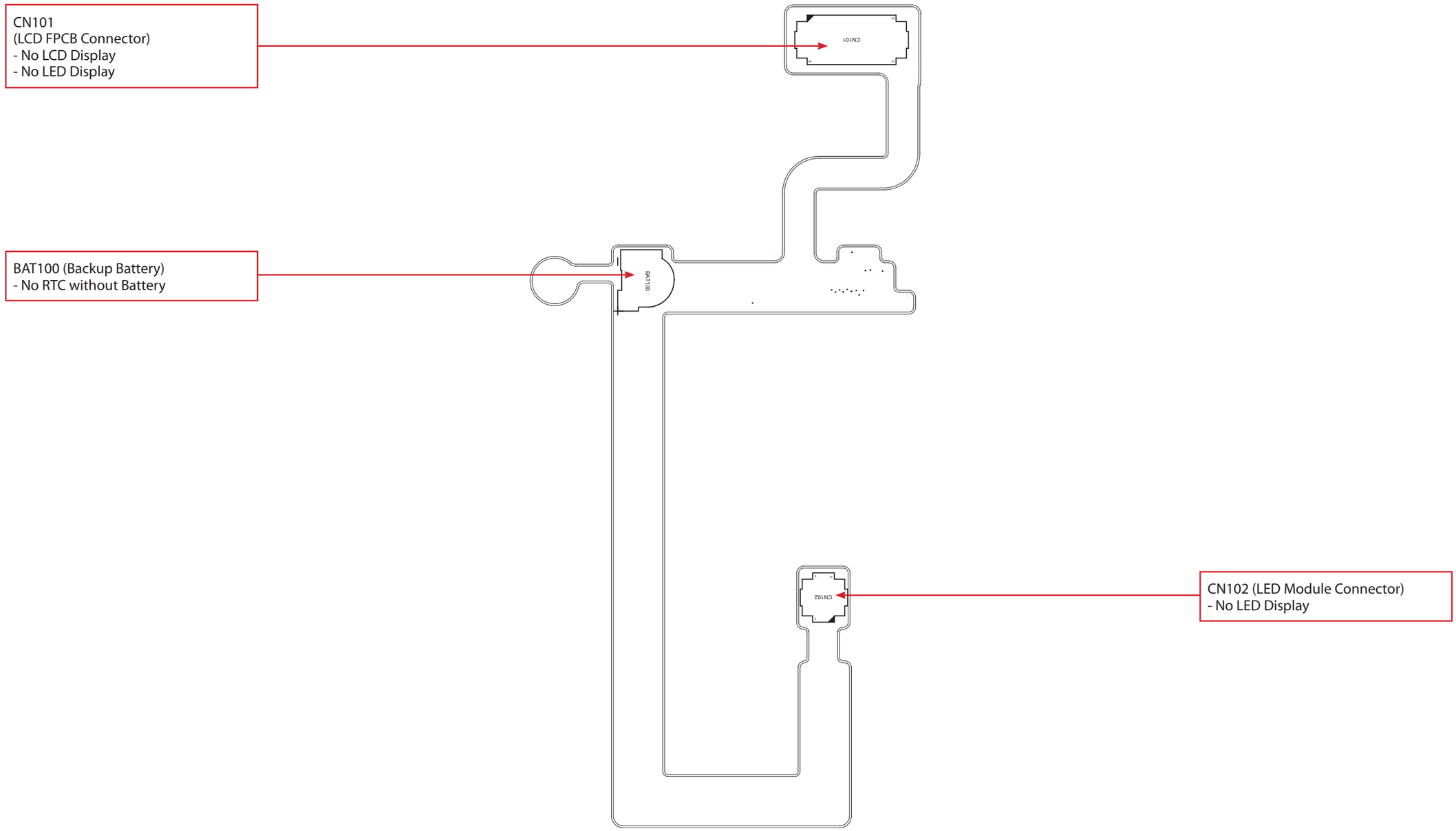
GD350_MAIN_SPFY0211001_1.0_BTM

9. PCB LAYOUT



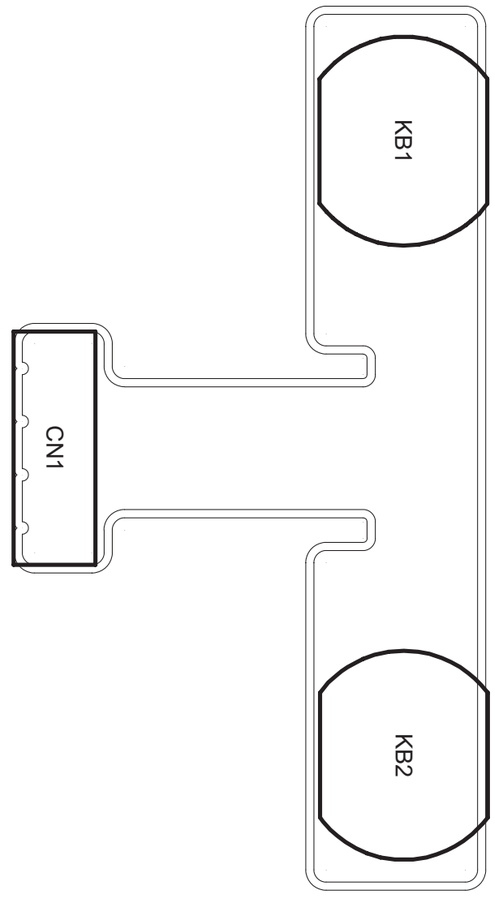
GD350_F_LCD_SPCY0199701_1.1_TOP

9. PCB LAYOUT



GD350_F_LCD_SPCY0199701_1.1_BOT

9. PCB LAYOUT



GD350_F_SK_VOL_SPKY0079201_1.0_TOP

10.ENGINEERING MODE

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset. The key sequence for switching the engineering mode on is “1809#*350# “Select. Pressing END will switch back to non-engineering mode operation. Use Up and Down key to select a menu and press ‘select’ key to progress the test. Pressing ‘back key will switch back to the original test menu.

[1] BB TEST

[1-1] Battery Info

[1-1-1] BattInfo

[1-2] Bluetooth Test

[1-2-1] Enter Test Mode
[1-2-2] OnOff Test
[1-2-3] Headset Test
[1-2-4] BT Test1
[1-2-5] BT Test2
[1-2-6] Xhtml Compose Print
[1-2-7] Xhtml Print Test

[2] Model Version

[2-1] Version

[3] Eng Mode

[3-1] Cell environ.

[3-2] PS Layer Info

[3-2-1] Mobility
[3-2-2] RadioRes
[3-2-1] Gprs

[3-3] Layer1 Info

[3-4] Reset Information

[3-5] Memory Configurarion

[3-6] MemGenConf

[3-7] MemAllUse

[3-8] MemDetUse

[3-9] MemDump

[3-10] Change Frequency Band

[4] Call Timer

[5] Factory Reset

[6] MF TEST

[6-1] All Auto Test

[6-2] Backlight

[6-2-1] BacklightOn
[6-2-2] BacklightOff

[6-3] Audio

[6-3-1] Audio Test

[6-4] Vibrator

[6-4-1] VibratorOn
[6-4-2] VibratorOff

[6-5] LCD

[6-5-1] Auto LCD

[6-6] Key pad

[6-7] Mic Speaker

[6-8] Camera

[6-8-1] Camera Main Preview
[6-8-2] FlashOn
[6-8-3] FlashOff
[6-8-4] CameraFlashBunning

[6-9] FM Radio

[6-9-1] FM Radio Test

[7] Network selection

[7-1] Automatic

[7-2] GSM850

[7-3] EGSM

[7-4] DCS

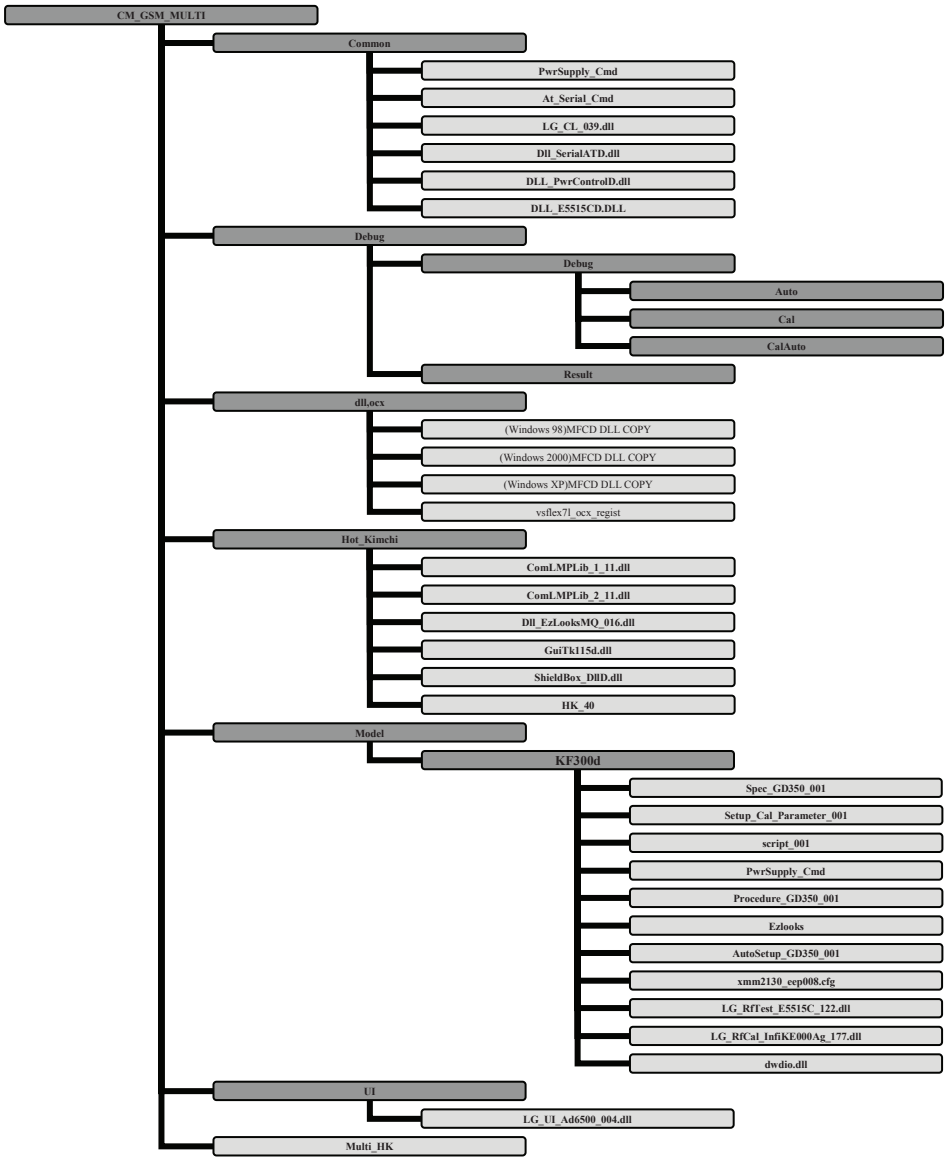
[7-5] PCS

11. AUTO CALIBRATION

11.1 Overview

Auto-cal (Auto Calibration) is the PC side Calibration tool that perform Tx, Rx and Battery Calibration with Agilent 8960(GSM call setting instrument) and Tektronix PS2521G(Programmable Power supply).
Auto-cal generates calibration data by communicating with phone and measuring equipment then write it into calibration data block of flash memory in GSM phone.

11.2 Configuration of HotKimchi



11.3 Description of Basic File

11.3.1. Common

-. **LG_CL_039.dll** : Common logic dll, Module In Charge of Reading PID & S/W Version, Booting.
-. **Dll_SerialATD.dll** : Serial Communication Module From Phone by AT Command.
-. **DLL_PwrControlD.dll** : Communication Module From Power supply.
-. **DLL_E5515CD.DLL** : Communication Module From Agilent 8960(Test Set).
-. **At_Serial_Cmd.xml** : Definition File of AT Command.
-. **PwrSupply_Cmd.xml** : Definition File of Power supply command.

11.3.2. Debug

-. **Debug** - Cal : Result File of Calibration.
Auto : Result File of Auto Test.
CalAuto : Result File of Cal & Auto Test.

11.3.3. dll, ocx

-. **vsflex7l_ocx_regist :** Registration File for System use

-. **Windows XXX)MFCD DLL :** Registration File for System use

11.3.4. HotKimchi

-. **HK_40.exe** : Execute File, HK_XX → XX is File Version.
-. **ComLMPLib_1_11.dll** : Communication Module With PLC or Shield Box In Automation Rack.
Support to J&S Shield Box and Tescom TC-5981A.
-. **ComLMPLib_2_11.dll** : Communication Module With PLC or Shield Box In Automation Rack.
Support to J&S Shield Box and Tescom TC-5981A.
-. **Dll_EzLooksMQ_005.dll** : Communication Module with ezTray Installed In Local PC.
-. **GuiTk115d.dll** : control library
-. **ShieldBox_DllD.dll** : Communication with Shield Box. Support to Tescom TC-5952B.

11.3.5. Model

-. **LG_RfCal_InfiKE000Ag_177.dll** : Main Module of Calibration
-. **LG_RfTest_E5515C_122.dll** : Main Module of Auto Test
-. **Xmm2130_eep008.cfg** : Cal Data Save binary Module.
-. **AutoSetup_GD350_100.xml** : RF TEST Setup Module.
-. **Ezlooks.xml** : Calibration ezLooks Item & Cal Spec Definition Module.
-. **Procedure_GD350_001.xml** : RF TEST Procedure Definition Module.
-. **Script_001.xml** : RF TEST Setup, calibration Setup Module.
-. **Spec_GD350_001.xml** : Definition Module of Auto Test Spec
-. **Setup_Cal_Parameter_001.xml** : Calibration Definition Module.

11.3.6. UI

-. LG_UI_Ad6500_002.dll : ADI Model UI Dll.

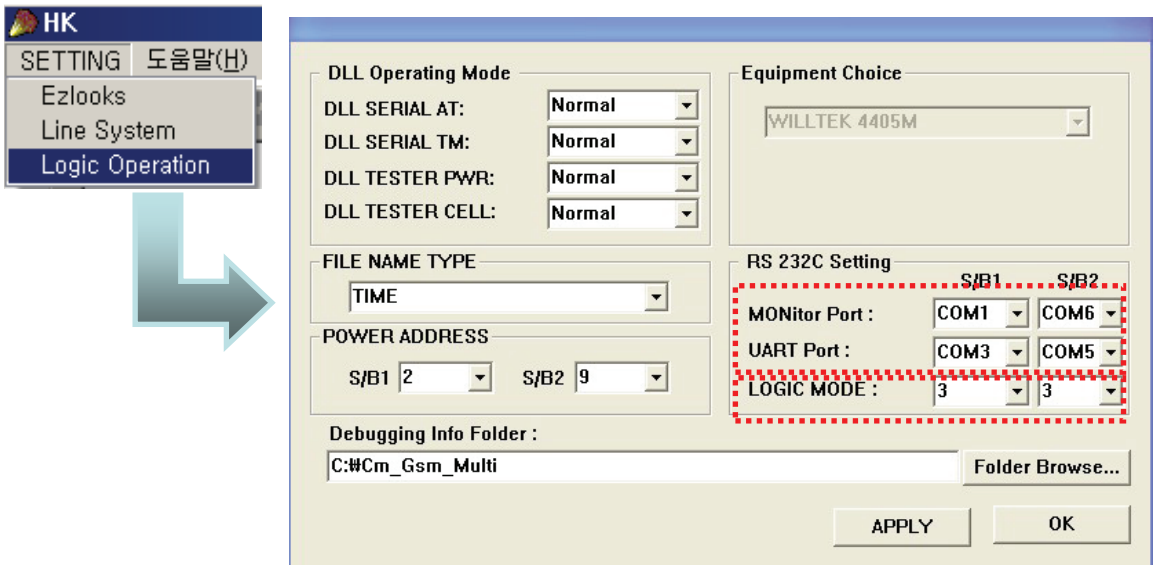
11.3.7. Multi_HK

-. Registration File For System Setting.

1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Set the Power Supply 4.0V
3. Set the 3rd, 4th of DIP SW ON state always
4. Press the Phone power key, if the Remote ON is used, 1st ON state

11.4 Procedure

1. Copy the file to C:\Cm_Gsm_Multi
2. Copy the files of((Windows XXX)MFCD DLL, vsflex7l_ocx_regist to C:\Cm_Gsm_Multi\dll,ocx
3. Select MFCD DLL of your computer OS
4. Click on “vsflex7l_ocx_regist”
5. Click on “Multi_HK reg”
6. Connect as Fig 11-2 (RS232 serial cable is connected between COM port of PC, in general.)
7. Run *HK_40exe* to start calibration.
8. Click “ Logic Operation” of “SETTING” menu bar



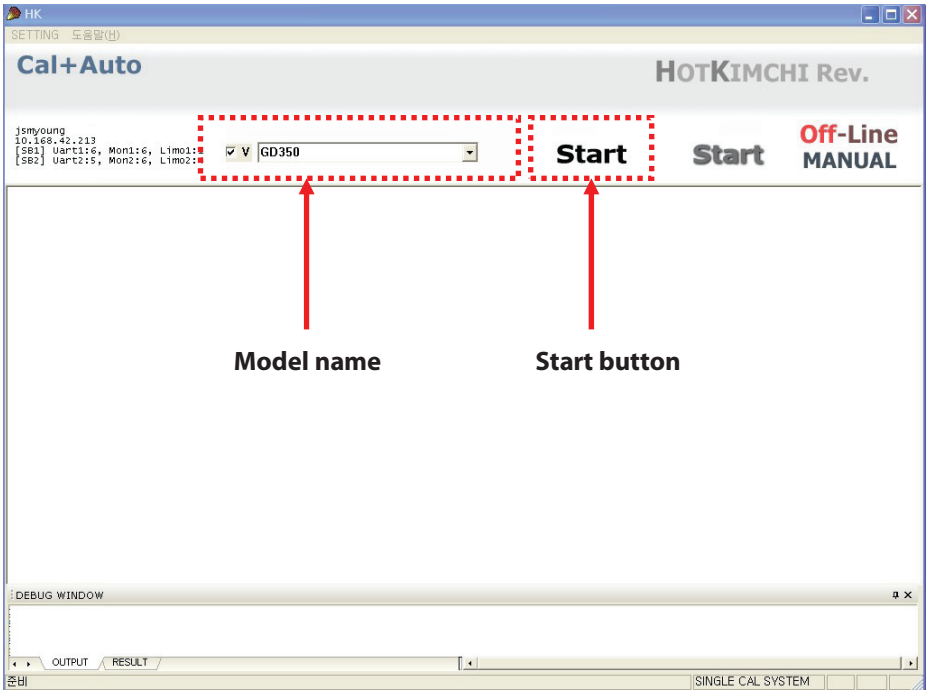
9. Set PORT (using RS232 cable) that PC can communicate with the phone

10. Select " LOGIC MODE" that you want

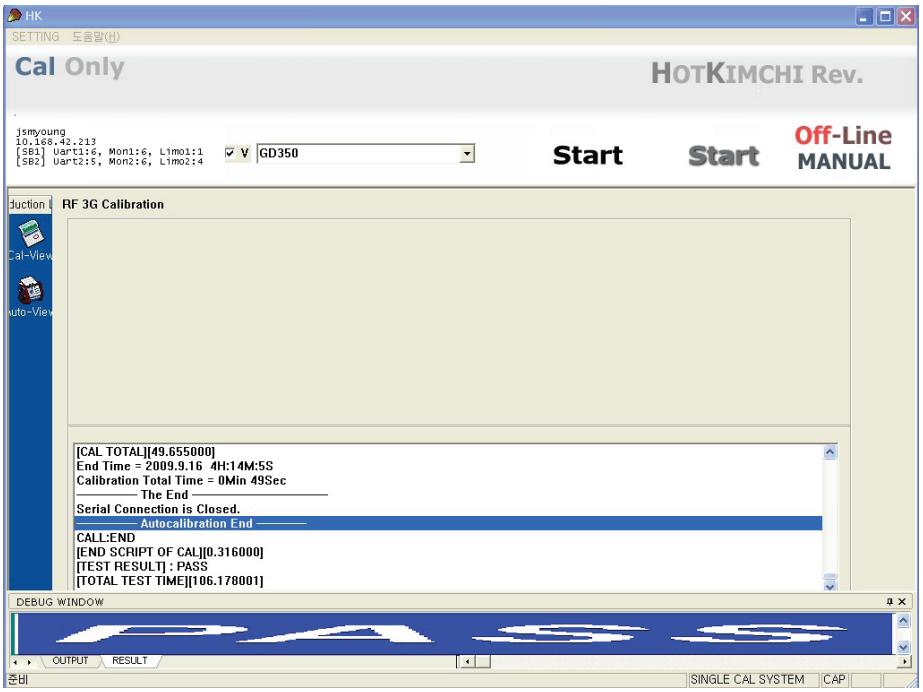
Logic mode: 1-> Calibration only
2-> Auto test only
3-> Cal & Auto

11. AUTO CALIBRATION

11. Select the model name “GD350”



12. Click “start” button



11.5 AGC

This procedure is for Rx calibration.
In this procedure, We can get RSSI correction value. Set band EGSM and press Start button the result window will show correction values per every power level and gain code and the same measure is performed per every frequency.

11.6 APC

This procedure is for Tx calibration.
In this procedure you can get proper scale factor value and measured power level.

11.7 ADC

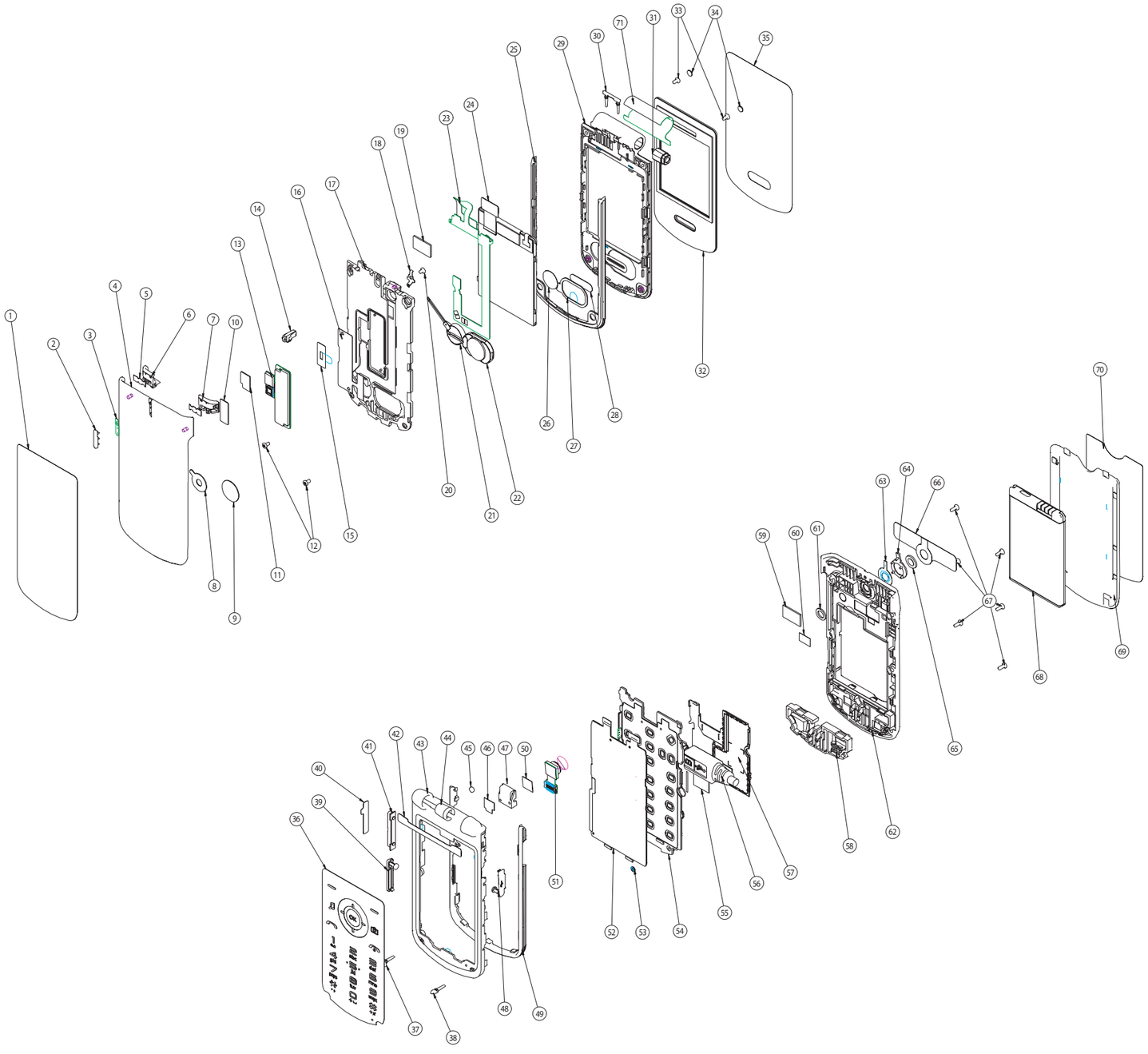
This procedure is for battery calibration.
You can get main Battery Config Table and temperature Config Table will be reset.

11.8 Target Power

BAND	Description	Low	Middle	High
GSM 850	Channel	128	191	251
	Frequency	824.2 MHz	836.8 MHz	848.8 MHz
	Max power	33 dBm	33 dBm	33 dBm
EGSM 900	Channel	975	37	124
	Frequency	880.2 MHz	897.4 MHz	914.8 MHz
	Max power	33 dBm	33 dBm	33 dBm
DCS1800	Channel	512	699	885
	Frequency	1710.2 MHz	1747.6 MHz	1784.8 MHz
	Max power	30 dBm	30 dBm	30 dBm
PCS 1900	Channel	512	661	810
	Frequency	1850.2 MHz	1880 MHz	1909.8 MHz
	Max power	30 dBm	30 dBm	30 dBm

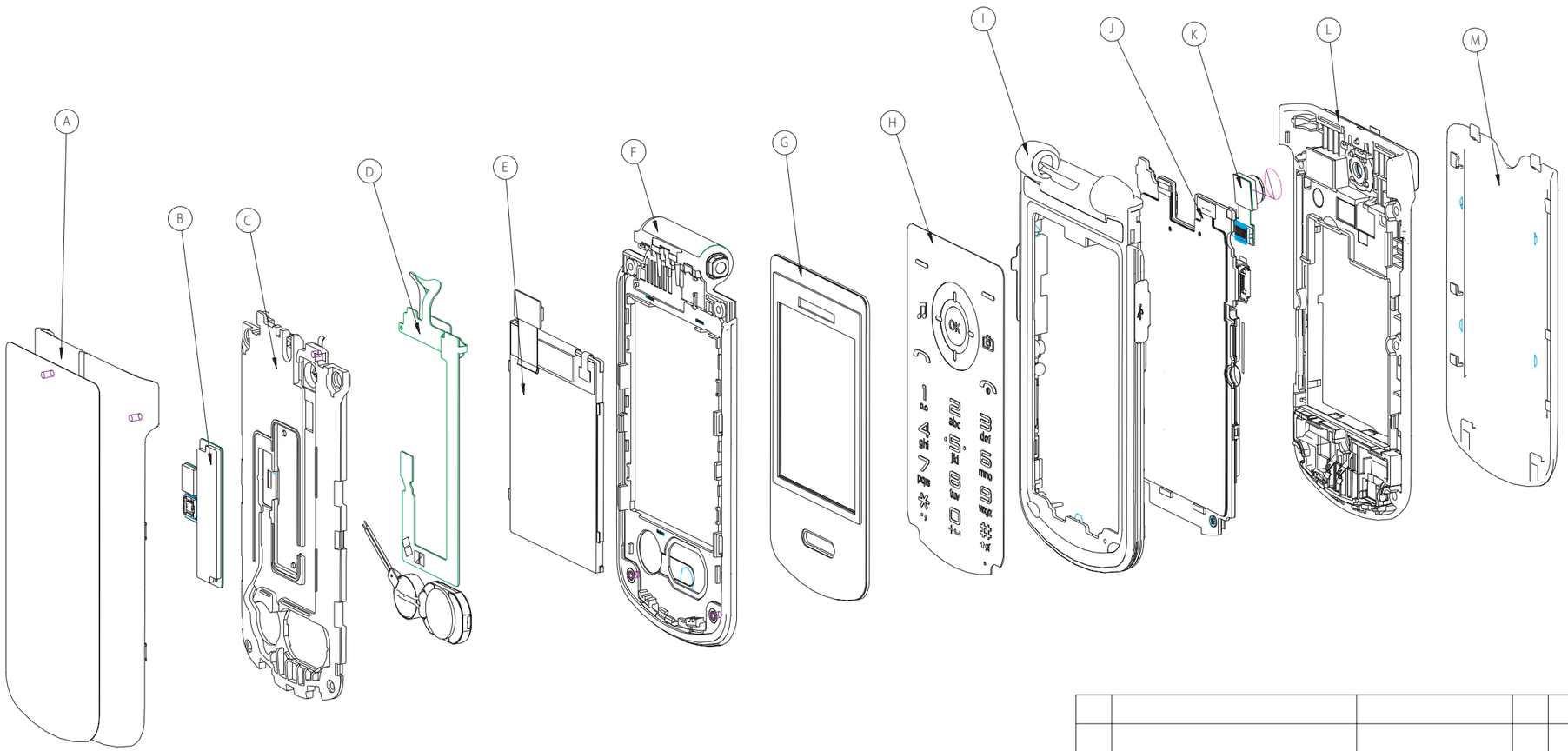
12. EXPLODED VIEW & REPLACEMENT PART LIST

12.1 EXPLODED VIEW



NO.	DESCRIPTION	DRAWING NO.	Q'TY	REMARKS
71	Tape, Protection	MTAB0394701	1	
70	Tape, Protection	MTAB0382201	1	
69	Cover, Battery	MCJA0098201	1	
68	Battery	-	1	
67	Screw Machine, Bind	GMEY0009201	6	
66	Tape, Protection	MTAB0345201	1	
65	Window, Camera	MWAE0052801	1	
64	Deco, Camera	MDAD0051301	1	
63	Tape, Deco	MTAA0204401	1	
62	Cover, Rear	MCJN0110001	1	
61	Pad, Camera	MPBT0083601	1	
60	Insulator	MIDZ0242601	1	
59	Pad, Connector	MPBU0081301	1	
58	INTENNA	-	1	
57	Can, Shield	MCBA0059101	1	
56	Insulator	MIDZ0225901	1	
55	ABSORBER,ELECTROMAGNETIC WAVE	MAAA0003901	1	
54	PCB ASSY,MAIN	-	1	
53	Pad, Mike	MPBH0051801	1	
52	Dome Assy, Metal	ADCA0103601	1	
51	Camera	SVCY0023801	1	
50	Tape, Camera	MTAK0030201	1	
49	Deco, Front	MDAG0054801	1	
48	Cap,Earphone Jack	MCCC0068801	1	
47	Bracket, Camera	MBFP0012501	1	
46	Tape, Camera	MTAK0030101	1	
45	Magnet	MMAA0011501	1	
44	Bushing, Hinge	MBIB0010601	1	
43	Cover Front	MCJK0114901	1	
42	Tape, Protection	MTAB0382101	1	
41	Button,Side	MBJL0102701	1	
40	Tape, Protection	MTAB0345001	1	
39	Cap,Multimedia Card	MCCG0022401	1	
38	Stopper, Folder	MSGC0011201	1	
37	Stopper, Folder	MSGC0011101	1	
36	Button Assy, Main	ABGF0020201	1	
35	Tape, Protection	MTAB0345101	1	
34	Cap, Screw	MCCH0153901	2	
33	Screw Machine, Bind	GMZZ0017701	2	
32	Window Assy, LCD	AWAB0039201	1	
31	Hinge, Folder	MHFD0015701	1	
30	Stopper, Hinge	MSGB0037001	1	
29	Cover, Folder(Lower)	MCJH0049201	1	
28	Filter, Speaker	MFBC0055201	1	
27	Pad, Speaker	MPBN0078701	1	
26	Tape, Motor	MTAF0031601	1	
25	Deco, Folder(Lower)	MDAF0011501	1	
24	LCD MODULE	SVLM0036401	1	
23	PCB, Assy Flexible	SACY0100601	1	
22	Speaker	SUSY0028901	1	
21	Vibrator	SJMY0007106	1	
20	Screw Machine, Bind	GMEY0019201	1	
19	Pad, Connector	MPBU0081101	1	
18	Contact (Hinge)	MCIZ0000201	1	
17	Bracket, LCD	MBFF0029001	1	
16	Tape	MTAZ0249401	1	
15	Tape	MTAZ0249501	1	
14	Stopper, Hinge	MSGB0037101	1	
13	LED Module	SMZY0021302	1	
12	Screw Machine, Bind	GMEY0010601	2	
11	Pad [Flexible PCB]	MPBZ0262701	1	
10	Pad, Connector	MPBU0081001	1	
9	Pad, Speaker	MPBN0078601	1	
8	Pad, Motor	MPBJ0069601	1	
7	Deco, Side	MDAC0029201	1	
6	Deco, Side	MDAC0029101	1	
5	Tape, Deco	MTAA0204301	2	
4	Cover, Folder(Upper)	MCJJ0059001	1	
3	Tape, Deco	MTAA0204201	1	
2	Deco, Folder(Upper)	MDAE0047201	1	
1	Tape, Protection	MTAB0344801	1	

ASS'Y EXPLODED VIEW



M	Cover ASSY, Battery	ACGA00383##		
L	Cover Assy, Rear	ACGM01424##		
K	Camera	SVCY0023801		
J	PCB ASSY,MAIN	SAFY03442##		
I	Cover Assy, Front	ACGK01452##		
H	Button Assy, Main	ABGF00202##		
G	Window Assy, LCD	AWAB00392##		
F	Cover Assy, Folder(Lower)	ACGH00594##		
E	LCD MODULE	SVLM0036401		
D	PCB, Assy Flexible/SPK/MTR	SACY0100601/SUSY0028902/SJMY0007106		
C	Bracket Assy	ABFZ0018701		
B	MODULE.ETC	SMZY0025301		
A	Cover Assy, Folder(Upper)	ACGJ00775##		
NO.	DESCRIPTION	DRAWING NO.	Q'TY	REMARKS

12.2 Replacement Parts <Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
2	AAAY00	ADDITION	AAAY0438902		BLACK	
3	ACGA00	COVER ASSY,BATTERY	ACGA0038301		BLACK	M
4	MCJA00	COVER,BATTERY	MCJA0098201	MOLD, PC LUPOY GP-2102, , , , ,	BLACK	69
4	MTAB00	TAPE,PROTECTION	MTAB0382201	COMPLEX, (empty), , , , ,	WITHOUT COLOR	70
3	MMBB00	MANUAL,OPERATION	MMBB0366901	PRINTING, (empty), , , , ,	WITHOUT COLOR	
2	APAY00	PACKAGE	APAY0139101	GD350 BRAZIL PACKAGE	WITHOUT COLOR	
2	APEY00	PHONE	APEY0901201	UADS : See GD350 VIVBK.	BLACK	
3	ACGG00	COVER ASSY,FOLDER	ACGG0101001		BLACK	
4	ABFZ00	BRACKET ASSY	ABFZ0018701		BLACK	C
5	GMEY00	SCREW MACHINE,BIND	GMEY0019201	1.4 mm,1.8 mm,SWCH18A ,N ,+ , ,; ,[empty] ,+ , , ,CR-7 ,WHITE ,[empty] ,[empty]	WHITE SILVER	20
5	MBFF00	BRACKET,LCD	MBFF0029001	MOLD, PC LUPOY SC-1004A, , , , ,	WITHOUT COLOR	17
5	MCIZ00	CONTACT	MCIZ0000201	PRESS, BeCu, , , , ,	WITHOUT COLOR	18
5	MICA	INSERT,FRONT	MICA0021701	CUTTING, Bs, , , , ,	SILVER	
5	MPBU00	PAD,CONNECTOR	MPBU0081101	COMPLEX, (empty), , , , ,	WITHOUT COLOR	19
5	MTAZ00	TAPE	MTAZ0249501	COMPLEX, (empty), , , , ,	WITHOUT COLOR	15
5	MTAZ01	TAPE	MTAZ0249401	COMPLEX, (empty), , , , ,	WITHOUT COLOR	16
4	ABGF00	BUTTON ASSY,MAIN	ABGF0020201		WITHOUT COLOR	H, 36
4	ACGH00	COVER ASSY,FOLDER(LOWER)	ACGH0059401		BLACK	F
5	MCJH00	COVER,FOLDER(LOWER)	MCJH0049201	MOLD, PC LUPOY SC-2302, , , , ,	BLACK	29
5	MDAF00	DECO,FOLDER(LOWER)	MDAF0011501	MOLD, PC LUPOY SC-1004A, , , , ,	GENUINE GOLD	25
5	MFBC00	FILTER,SPEAKER	MFBC0055201	COMPLEX, (empty), , , , ,	WITHOUT COLOR	28
5	MHFD00	HINGE,FOLDER	MHFD0015701	CASTING, STS, , , , ,	Without Color	31

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	MICA	INSERT,FRONT	MICA0021701	CUTTING, Bs, , , , ,	SILVER	
5	MPBN00	PAD,SPEAKER	MPBN0078701	COMPLEX, (empty), , , , ,	WITHOUT COLOR	27
5	MSGB00	STOPPER,HINGE	MSGB0037001	MOLD, Urethane Rubber S195A, , , , ,	BLACK	30
5	MTAB00	TAPE,PROTECTION	MTAB0394701	COMPLEX, (empty), , , , ,	WITHOUT COLOR	71
5	MTAF00	TAPE,MOTOR	MTAF0031601	COMPLEX, (empty), , , , ,	WITHOUT COLOR	26
4	ACGJ00	COVER ASSY,FOLDER(UPPER)	ACGJ0077501		BLACK	A
5	MCJJ00	COVER,FOLDER(UPPER)	MCJJ0059001	MOLD, PC LEXAN EXL4419, , , , ,	BLACK	4
5	MDAC002	DECO,SIDE	MDAC0029201	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	7
5	MDAC01	DECO,SIDE	MDAC0029101	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	6
5	MDAE00	DECO,FOLDER(UPPER)	MDAE0047201	MOLD, ABS MP-211, , , , ,	GENUINE GOLD	2
5	MICC00	INSERT,FRONT(UPPER)	MICC0011501	EXTRUSION, LDPE, , , , ,	Gold	
5	MPBJ00	PAD,MOTOR	MPBJ0069601	COMPLEX, (empty), , , , ,	WITHOUT COLOR	8
5	MPBN00	PAD,SPEAKER	MPBN0078601	COMPLEX, (empty), , , , ,	WITHOUT COLOR	9
5	MPBU00	PAD,CONNECTOR	MPBU0081001	COMPLEX, (empty), , , , ,	WITHOUT COLOR	10
5	MPBZ00	PAD	MPBZ0262701	COMPLEX, (empty), , , , ,	WITHOUT COLOR	11
5	MTAA01	TAPE,DECO	MTAA0204301	COMPLEX, (empty), , , , ,	WITHOUT COLOR	5
5	MTAA02	TAPE,DECO	MTAA0204201	COMPLEX, (empty), , , , ,	WITHOUT COLOR	3
5	MTAB00	TAPE,PROTECTION	MTAB0344801	COMPLEX, (empty), , , , ,	WITHOUT COLOR	1
4	ACGK00	COVER ASSY,FRONT	ACGK0145201		BLACK	I
5	MBFP00	BRACKET,CAMERA	MBFP0012501	MOLD, PC LUPOY SC-1004A, , , , ,	WITHOUT COLOR	47
5	MBIB00	BUSHING,HINGE	MBIB0010601	CASTING, Mg Alloy, , , , ,	WITHOUT COLOR	44
5	MBIB01	BUSHING,HINGE	MBIB0010701	MOLD, PC LUPOY SC-1004A, , , , ,	WITHOUT COLOR	
5	MBJL00	BUTTON,SIDE	MBJL0102701	COMPLEX, (empty), , , , ,	GENUINE GOLD	41

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	MCCC00	CAP,EARPHONE JACK	MCCC0068801	COMPLEX, (empty), , , , ,	GENUINE GOLD	48
5	MCCG00	CAP,MULTIMEDIA CARD	MCCG0022401	COMPLEX, (empty), , , , ,	WITHOUT COLOR	39
5	MCIB00	CONTACT,HINGE	MCIB0005001	PRESS, BeCu, , , , ,	WITHOUT COLOR	
5	MCJK00	COVER,FRONT	MCJK0114901	MOLD, PC LUPOY SC-2302, , , , ,	BLACK	43
5	MDAG00	DECO,FRONT	MDAG0054801	MOLD, PC LUPOY SC-1004A, , , , ,	GENUINE GOLD	49
5	MICA	INSERT,FRONT	MICA0017301	M17xL3.2	SILVER	
5	MMAA00	MAGNET,SWITCH	MMAA0011501	COMPLEX, (empty), , , , ,	TITANIUM	45
5	MSGC00	STOPPER,FOLDER	MSGC0011101	MOLD, Urethane Rubber S190A, , , , ,	BLACK	37
5	MSGC01	STOPPER,FOLDER	MSGC0011201	MOLD, Urethane Rubber S195A, , , , ,	BLACK	38
5	MTAB00	TAPE,PROTECTION	MTAB0345001	COMPLEX, (empty), , , , ,	WITHOUT COLOR	40
5	MTAB01	TAPE,PROTECTION	MTAB0382101	COMPLEX, (empty), , , , ,	WITHOUT COLOR	42
5	MTAK00	TAPE,CAMERA	MTAK0030101	COMPLEX, (empty), , , , ,	WITHOUT COLOR	46
5	MTAK01	TAPE,CAMERA	MTAK0030201	COMPLEX, (empty), , , , ,	WITHOUT COLOR	50
4	AWAB00	WINDOW ASSY,LCD	AWAB0039201		WITHOUT COLOR	G, 32
5	MTAD00	TAPE,WINDOW	MTAD0115201	COMPLEX, (empty), , , , ,	WITHOUT COLOR	
5	MWAC00	WINDOW,LCD	MWAC0128301	CUTTING, PMMA MR 200, , , , ,	WITHOUT COLOR	
4	GMEY00	SCREW MACHINE,BIND	GMEY0010601	1.4 mm,2.5 mm,MSWR3(BK) ,N ,+ ,NYLOK	Black	12
4	GMZZ00	SCREW MACHINE	GMZZ0017701	1.4 mm,3.0 mm,MSWR3 ,N ,+ ,- ,	Silver	33
4	MCCH00	CAP,SCREW	MCCH0153901	COMPLEX, (empty), , , , ,	WITHOUT COLOR	34
4	MSGB00	STOPPER,HINGE	MSGB0037101	MOLD, PC LUPOY SC-1004A, , , , ,	WITHOUT COLOR	14
4	MTAB00	TAPE,PROTECTION	MTAB0345101	COMPLEX, (empty), , , , ,	WITHOUT COLOR	35
3	ACGM00	COVER ASSY,REAR	ACGM0142401		BLACK	L
4	MCCF00	CAP,MOBILE SWITCH	MCCF0066301	COMPLEX, (empty), , , , ,	WITHOUT COLOR	
4	MCJN00	COVER,REAR	MCJN0110001	MOLD, PC LUPOY SC-2302, , , , ,	BLACK	62

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	MDAD00	DECO,CAMERA	MDAD0051301	MOLD, ABS MP-211, , , , ,	GENUINE GOLD	64
4	MIDZ00	INSULATOR	MIDZ0242601	COMPLEX, (empty), , , , ,	WITHOUT COLOR	60
4	MLAB	LABEL,A/S	MLAB0001102	C2000 USASV DIA 4.0	WHITE	
4	MPBT00	PAD,CAMERA	MPBT0083601	COMPLEX, (empty), , , , ,	WITHOUT COLOR	61
4	MPBU00	PAD,CONNECTOR	MPBU0081301	COMPLEX, (empty), , , , ,	WITHOUT COLOR	59
4	MTAA00	TAPE,DECO	MTAA0204401	COMPLEX, (empty), , , , ,	WITHOUT COLOR	63
4	MTAB00	TAPE,PROTECTION	MTAB0345201	COMPLEX, (empty), , , , ,	WITHOUT COLOR	66
4	MWAE00	WINDOW,CAMERA	MWAE0052801	CUTTING, Tempered Glass, , , , ,	WITHOUT COLOR	65
3	GMEY00	SCREW MACHINE,BIND	GMEY0009201	1.4 mm,3.5 mm,MSWR3(BK) ,B ,+ ,HEAD D=2.7mm	BLACK	67
3	MLAA00	LABEL,APPROVAL	MLAA0062314	COMPLEX, (empty), , , , ,	WITHOUT COLOR	
5	ACKA00	CAN ASSY,SHIELD	ACKA0020201	(btm)	WITHOUT COLOR	
6	MAAA00	ABSORBER,ELECTROMAGNETIC WAVE	MAAA0003901	COMPLEX, (empty), , , , ,	WITHOUT COLOR	55
6	MCBA00	CAN,SHIELD	MCBA0059101	PRESS, STS, , , , ,	WITHOUT COLOR	57
6	MIDZ00	INSULATOR	MIDZ0225901	COMPLEX, (empty), , , , ,	WITHOUT COLOR	56
5	ADCA00	DOME ASSY,METAL	ADCA0103601		WITHOUT COLOR	52
5	MPBH00	PAD,MIKE	MPBH0051801	COMPLEX, (empty), , , , ,	WITHOUT COLOR	53
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	WITHOUT COLOR	
6	SC200	CAN,SHIELD	MCBA0059201	PRESS, STS, , , , ,	WITHOUT COLOR	

12.2 Replacement Parts

<Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		GSM(FOLDER)	TGFF0106305		BLACK	
3	ENSY00	CONN,SOCKET	ENSY0015401	9 PIN,ETC , , mm,SD Adaptor for TFR		
4	SACY00	PCB ASSY,FLEXIBLE	SACY0100601			D, 23
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0090801			
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0066501			
7	BAT100	BATTERY,CELL,LITHIUM	SBCL0001701	2 V,0.5 mAh,CYLINDER ,Reflow type BB, Max T 1.67, phi 4.8, Pb-Free		
7	CN101	CONNECTOR,BOARD TO BOARD	ENBY0023201	44 PIN,0.4 mm,ETC , ,H=0.9, Header		
7	CN102	CONNECTOR,BOARD TO BOARD	ENBY0018501	10 PIN,.4 mm,STRAIGHT , ,H=0.9,HEADER		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0079101			
7	C100	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C103	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C104	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C105	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C106	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C107	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	CN103	CONNECTOR,BOARD TO BOARD	ENBY0047001	36 ,.4 mm,ETC , ,H=1.0T ,; , ,0.40MM ,[empty] ,MALE ,[empty] ,[empty] , ,		
7	D100	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D101	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D102	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D103	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	L100	INDUCTOR,CHIP	ELCH0001402	18 nH,J ,1005 ,R/TP ,Pb Free		
7	R100	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
7	R101	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	U100	IC	EUSY0362601	SSON004 ,4 ,R/TP ,Hall IC ,; ,IC,CMOS		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	VA100	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	SPCY00	PCB,FLEXIBLE	SPCY0199701	POLYI ,0.4 mm,MULTI-5 , ,; , , , , , , , , ,		
4	SJMY00	VIBRATOR,MOTOR	SJMY0007106	3 V,.08 A,10*3.0T ,17mm ,; ,3V , , ,12000 rpm , , , ,		D, 21
4	SMZY00	MODULE,ETC	SMZY0025301	LED MATRIX(RED, 115EA) ,; ,Module Assembly		B, 13
4	SUSY00	SPEAKER	SUSY0028902	ASSY ,8 ohm,91 dB,1812 mm,3.0T 15mm ,; , , , , , , ,[empty]		D, 14
4	SVCY00	CAMERA	SVCY0023801	CMOS ,MEGA ,2M FF [FPCB, Hynix 1/5", 90 degree]		K, 51
4	SVLM00	LCD MODULE	SVLM0036401	Main ,2.0" ,176*220 ,37.3*49.75*1.95T ,262K ,TFT ,TM ,LG4525B , ,		E, 24
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0054401	3.0 ,-2.0 dBd,, ,internal, GSM850/900/1800/1900 ,; ,QUAD ,-5.0 ,50 ,3.0		
3	SAFY00	PCB ASSY,MAIN	SAFY0344203			
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0105801			
5	BRAH00	RESIN,PC	BRAH0001301	; , , , ,[empty]	Black	
5	SPKY00	PCB,SIDEKEY	SPKY0079201	POLYI ,0.2 mm,DOUBLE , ,; , , , , , , , , ,		
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0255203			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0135301			
6	ANT303	ANTENNA,MOBILE,FIXED	SNMF0051501	5 ,-5 dB,Internal, BT, Chip, Pb Free ,; ,SINGLE , , ,		
6	C100	CAP,TANTAL,CHIP	ECTH0005704	33 uF,10V ,M ,L_ESR ,2012 ,R/TP ,; , ,[empty] ,[empty] ,[empty] , ,[empty] ,[empty] ,[empty] ,[empty]		
6	C101	CAP,TANTAL,CHIP	ECTH0001903	22 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C102	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C103	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C105	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C106	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C107	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C108	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C109	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C110	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C111	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C112	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C113	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C114	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C115	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C117	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C119	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C121	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C122	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C123	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C124	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C125	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C126	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C127	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C128	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C130	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C131	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
6	C133	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C135	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C136	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C138	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C139	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C141	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C142	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C144	VARISTOR	SEVY0010501	5 V, ,SMD , ,; ,5 , ,0.4pF(typ) ,1005 ,[empty] ,[empty] ,R/TP		
6	C145	VARISTOR	SEVY0010501	5 V, ,SMD , ,; ,5 , ,0.4pF(typ) ,1005 ,[empty] ,[empty] ,R/TP		
6	C149	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C150	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C200	CAP,CERAMIC,CHIP	ECCH0000145	1.5 nF,50V,K,X7R,HD,1005,R/TP		
6	C201	CAP,CERAMIC,CHIP	ECCH0000145	1.5 nF,50V,K,X7R,HD,1005,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
6	C203	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
6	C204	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C206	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C208	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C212	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C214	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C215	CAP,CERAMIC,CHIP	ECCH0000145	1.5 nF,50V,K,X7R,HD,1005,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C218	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C220	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
6	C221	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C222	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C223	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C224	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C225	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C226	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C232	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C233	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C234	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C235	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C236	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C237	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C238	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C240	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C241	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C242	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C243	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C244	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C245	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C246	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C247	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C248	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C250	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C251	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C252	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C254	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C257	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C258	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C259	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C260	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C261	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C262	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C263	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C264	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C265	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C267	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C300	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C302	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C304	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C305	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C306	CAP,CHIP,MAKER	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C307	CAP,CHIP,MAKER	ECZH0001002	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C308	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C309	CAP,CERAMIC,CHIP	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP		
6	C310	CAP,CERAMIC,CHIP	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0001001	6.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP ,; , ,0.5PF ,50V ,NP0 ,[empty] ,1005 ,R/TP , mm		
6	C312	CAP,CERAMIC,CHIP	ECCH0001001	6.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP ,; , ,0.5PF ,50V ,NP0 ,[empty] ,1005 ,R/TP , mm		
6	C313	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C314	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C315	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C316	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C317	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C318	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C319	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C320	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C321	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C322	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C323	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C325	CAP,CHIP,MAKER	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C326	CAP,CERAMIC,CHIP	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C327	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C328	CAP,CHIP,MAKER	ECZH0000824	20 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C330	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C331	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	CN201	CONNECTOR,I/O	ENRY0008801	5 , mm,ANGLE , , ,; , ,0.64MM ,ANGLE ,[empty] ,DIP ,[empty] ,		
6	CN202	CONNECTOR,ETC	ENZY0022201	3 ,2.5 mm,ETC , ,		
6	CN203	CONNECTOR,BOARD TO BOARD	ENBY0023301	44 PIN,0.4 mm,ETC , ,H=0.9, Socket		
6	CN204	CONNECTOR,BOARD TO BOARD	ENBY0034201	24 PIN,0.4 mm,ETC , ,GB042 H=1.0, Socket		
6	D100	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D101	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D102	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D103	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D200	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D201	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D202	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D203	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D204	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D205	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	D206	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D207	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D208	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	FB100	FILTER,BEAD,CHIP	SFBH0007103	75 ohm,1005 ,CHIP BEAD, 300mA		
6	FB101	FILTER,BEAD,CHIP	SFBH0007103	75 ohm,1005 ,CHIP BEAD, 300mA		
6	FB200	FILTER,BEAD,CHIP	SFBH0000912	1000 ohm,1005 ,		
6	FB201	FILTER,BEAD,CHIP	SFBH0000912	1000 ohm,1005 ,		
6	FB202	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005 ,Chip bead ,; ,1800ohm ,; ,[empty] ,R/TP		
6	FB203	FILTER,BEAD,CHIP	SFBH0000912	1000 ohm,1005 ,		
6	FB204	FILTER,BEAD,CHIP	SFBH0000912	1000 ohm,1005 ,		
6	FL200	FILTER,EMI/POWER	SFEY0006501	SMD ,3 TERMINAL EMI FILTER		
6	FL201	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL202	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL204	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL205	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL206	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL300	FILTER,SAW,DUAL	SFSB0002301	881.5 MHz,25 MHz,2.6 dB,30 dB,942.5 MHz,35 MHz,30 dB,15 dB,1.8*1.4*0.68 ,SMD ,869M~894M,925M~960M,10p,B,150,LH,GSM850+EGSM Rx,DIP_OUT ,; ,881.5+942.5 ,1.8*1.4*0.68 ,SMD ,R/TP		
6	FL301	FILTER,SAW,DUAL	SFSB0002302	1842.5 MHz,75 MHz,3.5 dB,10 dB,1960 MHz,60 MHz,3.5 dB,10 dB,1.8*1.4*0.68 ,SMD ,1805M~1880M,1930M~1990M,10p,B,100,DCS+PCS Rx,LH,DIP_OUT ,; ,1842.5+1960 ,1.8*1.4*0.68 ,SMD ,R/TP		
6	J100	CONN,SOCKET	ENSY0018701	6 PIN,ETC , ,2.54 mm,H=1.8		
6	L100	INDUCTOR,SMD,POWER	ELCP0008003	3.3 uH,M ,2.5*2.0*1.0 ,R/TP ,Chip power		
6	L201	INDUCTOR,CHIP	ELCH0010302	100 nH,J ,1608 ,R/TP ,chip coil		
6	L204	INDUCTOR,CHIP	ELCH0003842	100 nH,J ,1005 ,R/TP ,MLCI		
6	L302	INDUCTOR,CHIP	ELCH0003826	3.3 nH,S ,1005 ,R/TP ,chip		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	L303	INDUCTOR,CHIP	ELCH0001033	1.5 nH,S ,1005 ,R/TP ,PBFREE		
6	L304	INDUCTOR,CHIP	ELCH0003826	3.3 nH,S ,1005 ,R/TP ,chip		
6	L306	INDUCTOR,CHIP	ELCH0003842	100 nH,J ,1005 ,R/TP ,MLCI		
6	L308	INDUCTOR,CHIP	ELCH0001032	18 nH,J ,1005 ,R/TP ,PBFREE		
6	L313	INDUCTOR,CHIP	ELCH0012511	3.9 nH,S ,1005 ,R/TP ,chip coil		
6	L314	INDUCTOR,CHIP	ELCH0012510	15 nH,G ,1005 ,R/TP ,chip coil		
6	M300	MODULE,ETC	SMZY0020001	Bluetooth Module(3.3*3.3*1.3, 30PIN,BCM2070) ,; ,Bluetooth		
6	MIC200	MICROPHONE	SUMY0010610	UNIT ,-42 dB,4.72*3.76*1.25 ,mems TDMA Improve ,; , , ,OMNI ,[empty] , ,SMD		
6	PT300	THERMISTOR	SETY0006301	NTC ,10000 ohm,SMD ,1005, 3350~3399k, J, R/T, PBFREE		
6	Q100	TR,BJT,NPN	EQBN0020501	ESM ,0.15 W,R/TP , ,; ,NPN ,5V ,60V ,50V ,150mA ,0.1uA MAX ,10 MIN 700 MAX ,100mW ,ESM ,R/TP ,3P		
6	Q200	TR,BJT,NPN	EQBN0020501	ESM ,0.15 W,R/TP , ,; ,NPN ,5V ,60V ,50V ,150mA ,0.1uA MAX ,10 MIN 700 MAX ,100mW ,ESM ,R/TP ,3P		
6	R100	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R102	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R103	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R104	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R105	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R106	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R107	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R109	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0000475	3900 ohm,1/16W ,J ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000499	5600 ohm,1/16W ,J ,1005 ,R/TP		
6	R113	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R114	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R115	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R116	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R117	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R119	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R120	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R121	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R122	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R123	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R124	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R125	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R126	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R127	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R128	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R130	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R200	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
6	R202	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R204	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R205	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R206	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R207	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R208	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R211	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R212	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R213	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R216	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R219	RES,CHIP	ERHY0000105	51 ohm,1/16W,F,1005,R/TP		
6	R220	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R222	RES,CHIP,MAKER	ERHZ0000412	1200 ohm,1/16W ,J ,1005 ,R/TP		
6	R225	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
6	R226	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R227	RES,CHIP,MAKER	ERHZ0000238	200 Kohm,1/16W ,F ,1005 ,R/TP		
6	R229	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R230	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R231	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R232	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R233	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R234	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R235	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R236	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R238	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R243	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
6	R244	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
6	R245	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
6	R246	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
6	R302	RES,CHIP,MAKER	ERHZ0000408	110 ohm,1/16W ,J ,1005 ,R/TP		
6	R303	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R304	RES,CHIP,MAKER	ERHZ0000408	110 ohm,1/16W ,J ,1005 ,R/TP		
6	R305	RES,CHIP,MAKER	ERHZ0000408	110 ohm,1/16W ,J ,1005 ,R/TP		
6	R306	RES,CHIP,MAKER	ERHZ0000408	110 ohm,1/16W ,J ,1005 ,R/TP		
6	R309	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R313	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R314	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	S100	CONN,SOCKET	ENSY0023301	8 ,ETC , ,0.7 mm,H=1.52,(15*15)		
6	SW300	CONN,RF SWITCH	ENWY0005301	,SMD , dB,H=1.85 ,; ,3.00MM ,STRAIGHT ,RF ADAPTER ,SMD ,R/TP ,AU , ,		
6	U100	IC	EUSY0366601	BGA ,210 ,R/TP ,EDGE RF, BB, PM, FM RDS Onechip BB, 216pin, 0.5mm pitch ,; ,IC,Digital Baseband Processor		
6	U101	IC	EUSY0368502	BGA ,56 ,R/TP ,512M NOR + 128M pSRAM 1.8V AD_AAD MUX, 8 by 8 ,56 ,R/TP , ,; ,IC,MCP		
6	U200	IC	EUSY0405401	CSP ,20 ,R/TP ,MUIC ,; ,IC,Analog Multiplexer		
6	U201	IC	EUSY0383701	DFN ,10 ,R/TP ,Cal Test support single Charger IC ,; ,IC,Charger		
6	U202	IC	EUSY0390501	WLCSP ,20 ,R/TP , ,; ,IC,Audio Sub System		
6	U203	IC	EUSY0263105	QFN ,20 PIN,R/TP ,SUB-PMIC4Ch+2LDO ,; ,IC,Charge Pump		
6	U300	RF MODULE,HANDSET	SMRH0005601	MHz, MHz,GSM Quad Tx Module 6x8 ,		
6	VA200	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA201	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA202	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA203	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA204	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA205	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA206	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA207	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA210	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA211	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA212	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA213	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA230	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		
6	VA231	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	X100	X-TAL	EXXY0025901	26 MHz,10 PPM,8.5 pF,40 ohm,SMD ,25*20*0.5 ,GM500 26M X-Tal(IFX Ref.), Pb-Free ,; ,26MHz ,10PPM ,8.5pF , , ,SMD ,R/TP		
6	X101	X-TAL	EXXY0018701	32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9 ,		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0132701			
6	LD200	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.2V ,30mA ,1200~1400mcd , ,120mW ,[empty] ,[empty] ,2P		
6	LD201	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.2V ,30mA ,1200~1400mcd , ,120mW ,[empty] ,[empty] ,2P		
6	LD202	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.2V ,30mA ,1200~1400mcd , ,120mW ,[empty] ,[empty] ,2P		
6	LD203	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.2V ,30mA ,1200~1400mcd , ,120mW ,[empty] ,[empty] ,2P		
6	SPFY00	PCB,MAIN	SPFY0211001	FR-4 ,0.8 mm,STAGGERED-8 , ,; , , , , , , , , ,		
3	SMZY00	MODULE,ETC	SMZY0017801	1GB / MICROSD / MLC 1 DIE ,; ,Module Assembly		

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.3 Accessory

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
3	SBPP00	BATTERY PACK,LI-POLYMER	SBPP0028301	3.7 V,800 mAh,1 CELL,PRISMATIC ,38350,INNERPACK,WW ,; ,3.7 ,800 ,160 ,PRISMATIC ,3.8X34X50 ,4.5X34.2X53 ,BLACK ,INNERPACK ,	BLACK	
3	SGDY00	DATA CABLE	SGDY0014302	; ,[empty] ,[empty] ,1.2M , ,BLACK ,1.2m, 4, Shield case MicroUSB, ID resistor open ,N		
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0003218	; ,. ,. ,. ,. ,. ,[empty] ,BLACK ,5P MICRO USB CONNECTOR ,Earphone,Stereo		
3	SSAD00	ADAPTOR,AC-DC	SSAD0036001	100/250V , Hz, V, A, , ,; , , , , , ,[empty] ,[empty] ,		
대치		ADAPTOR,AC-DC	SSAD0036101	100/250V , Hz, V, A, , ,; , , , , , ,[empty] ,[empty] ,		
대치		ADAPTOR,AC-DC	SSAD0036102	100-240V ,5060 Hz,5.1 V,.7 A,ANATEL ,Cableless TA ,; ,90Vac~264Vac ,5.1Vdc ,0.7A ,5060 ,- ,WALL 2P ,USB ,-		